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MUSKEGON, MICHIGAN: THE EVOLUTION OF A LAKE PORT

A DISSERTATION SUBMITTED TO THE FACULTY OF THE DIVISION OF THE PHYSICAL SCIENCES IN CANDIDACY FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

DEPARTMENT OF GEOGRAPHY
1939

By
JAMES GLASGOW

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MUSKEGON

MICHIGAN.
1874.

1. COURT HOUSE.
2. UNION SCHOOL.
3. WARD SCHOOLS.
4. FIRE ENGINE HOUSE.
5. GOODRICH LINE STEAMBOAT LANDING.
6. ENGLEMAN LINE STEAMBOAT LANDING.
7. M. & L. S. R. R. DEPOT.
8. C. & L. S. R. R. DEPOT.

CHURCHES.

10. METHODIST CHURCH.
11. CATHOLIC CHURCH.
12. CONGREGATIONAL CHURCH.
13. UNIVERSALIST CHURCH.
14. BAPTIST CHURCH.
15. EPISCOPAL CHURCH.
16. GERMAN REFORM CHURCH.
17. HOLLAND CHURCH.
18. LUTHERAN CHURCH.

HOTELS.

19. OCCIDENTAL HOTEL.
20. NATIONAL HOTEL.
21. AMERICAN HOUSE.
22. CENTRAL HOTEL.
23. PACIFIC HOUSE.
24. FORREST CITY HOUSE.
25. INN STREET HOUSE.
26. MILWAUKEE HOUSE.
27. MICHIGAN HOUSE.
28. WASHINGTON HOUSE.

29. MASON LUMBER CO'S. DRY KILN MILLS.
30. REIDLER LUMBER, LATH AND PICKET MANF'G CO.
31. [illegible] GLUE, SAW MILLS AND LUMBER DOCKS.
32. S. F. SMITH, SAW WORKS.
33. DANIEL KELLEY, PLANING MILL, SASH, DOOR AND BLIND FACTORY.
34. CHAMPION PLANING MILL.
35. FOUNDRY AND MACHINE SHOP.
36. HACKLEY & McGORDON'S SAW MILLS.
37. OTHER SAW MILLS.
38. BOILER WORKS.
39. HAMILTON'S MILLS.

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A number of persons contributed to this study. Clerks and officials in certain municipal and county departments supplied unpublished data, manufacturers and professional men in Muskegon and farmers in the vicinity granted helpful interviews, and the staff of the Hackley Public Library in Muskegon rendered unfailing assistance. All of this help proved invaluable. Acknowledgment is due particularly to Mr. John C. Buekema, Secretary of the Chamber of Commerce, to Mr. C. Tefft Hewitt, Librarian of the Hackley Public Library, to Miss Blanche Robertson, Reference Librarian of the Hackley Public Library, to Mr. Dale Case, Instructor in Geography at the Muskegon Junior College, and to Mr. Charles H. Yates for granting access to his collection of excellent prints and reproductions of pictures taken during lumber days. During the preparation of the maps and manuscript, assistance and encouragement were given by various persons in the Department of Geography at The University of Chicago, notably by Miss Alice Foster, Professor Henry M. Leppard, and Professor H. H. Barrows.

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June, 1939

James Glasgow
Chicago, Illinois

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FOREWORD

Muskegon is the largest port on the west coast of Michigan (Fig. 1).[1] It consists of two cities, Muskegon proper and Muskegon Heights; a village, North Muskegon (Fig. 2); and some unorganized residential districts contiguous to these political units. The community nearly encircles Muskegon Lake, the drowned mouth of the Muskegon River (Fig. 3). The 70,000 people living within this urban area depend, directly or indirectly, almost entirely upon manufacturing. The sterility of most of the soil precludes much commercial agriculture in the vicinity, and the summer resort business has been developed but little.

For centuries the shore of Muskegon Lake has been a focal point of occupance. Mound Builders lived in the vicinity of the lake as late as 1600 and left mounds and garden beds. They were followed by the Ottawa Indians, some three hundred of whom occupied the area which later became Muskegon County. Soon after 1800, fur traders established posts on the harbor to which Indians from the Muskegon River Basin came with furs. With the cession of the Indian lands to the Government in 1836, squatters took up land near the lake. Soon they were followed by sawmill operators from the Northeast, who built almost forty mills on the edge of the harbor, floated millions of logs to its surface, and sent thousands of boatloads of lumber from the port. Many Scandinavians and Hollanders also came, to work in the logging camps and sawmills. Shortly after the turn of the century, the timber of the basin was gone, and the operators abandoned Muskegon to a group of young industrialists who transformed the stagnant community into a thriving industrial center whose factories now produce diversified articles and whose port facilities now handle one and a quarter million tons annually.

---

[1] Hereafter, the terms "Muskegon," "Greater Muskegon," and "the community" will be used interchangeably. Any one of them will refer to the urban area around Muskegon Lake. The terms "village" and "city" will be reserved for entities within this urban area.

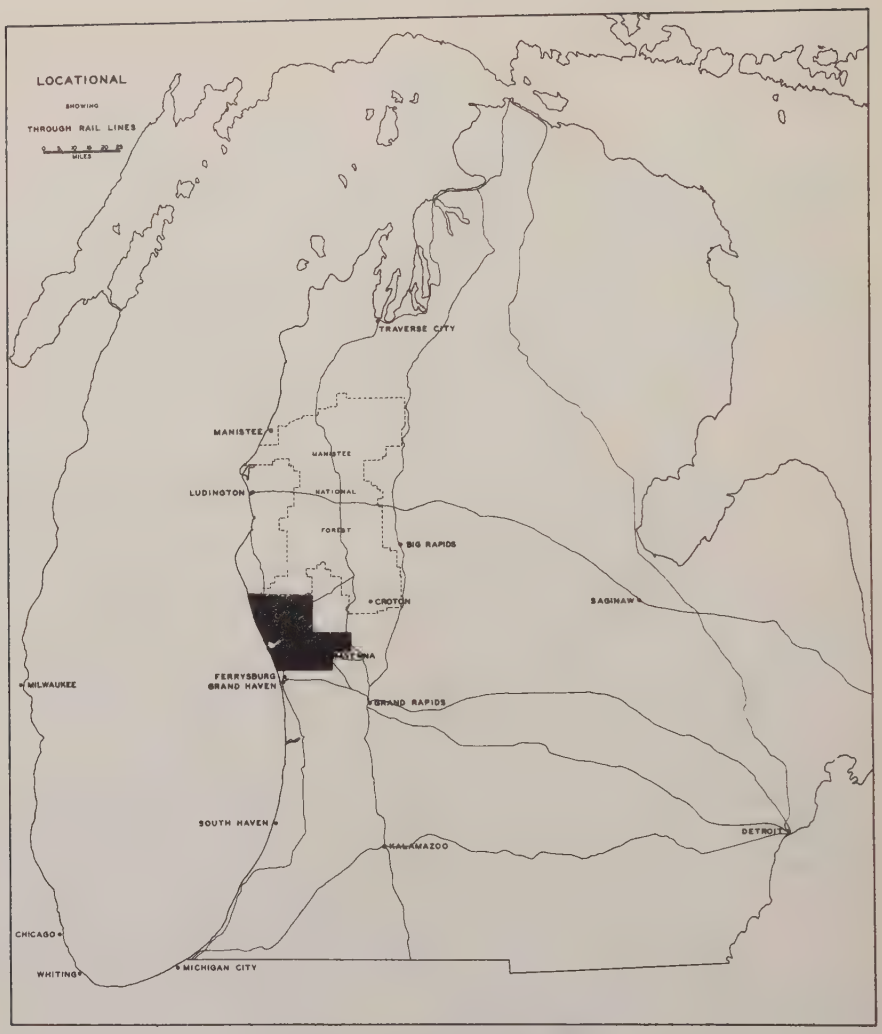

Fig. 1.--Locational map

Stability has developed only recently in Muskegon. Fur-bearing animals and timber in turn constituted the foundations of economic activity around the lake in the early days. Later, the discovery and production of oil caused a ripple in the economic life of the community. All three were exhaustible resources, and the contributions that they made to Muskegon were temporary. So, too, were the fur traders, sawmill operators, and workers in the

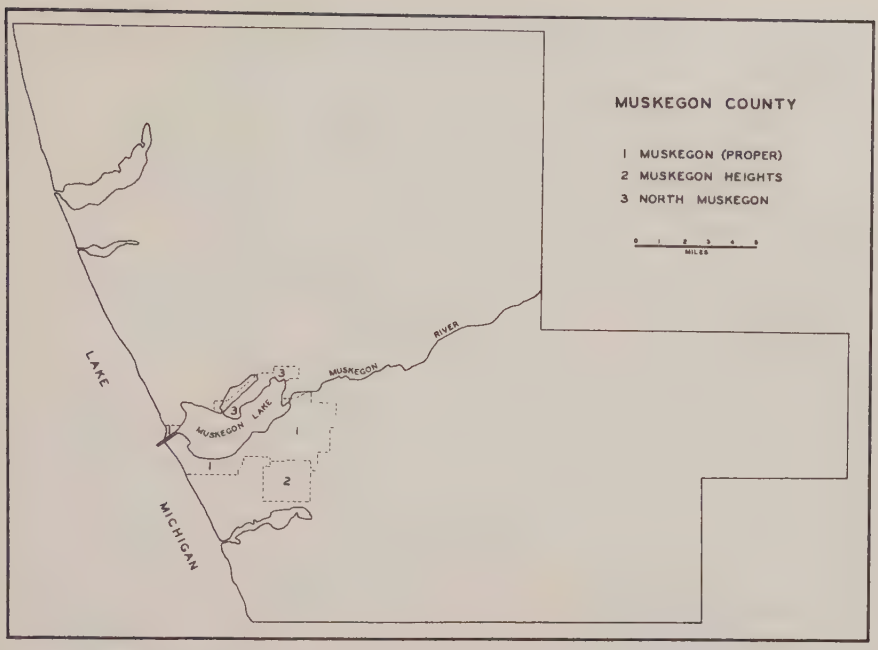

Fig. 2.--Muskegon County showing political units around Muskegon Lake.

oil field temporary residents, concerned with the exploitation of a transient resource. Now, at last, the establishment of varied industries resting on more nearly permanent bases has brought a measure of stability to the community.

Among all the industries that have contributed to the development of Muskegon, lumbering is outstanding. It constituted the major economic support of the community for a longer time than any other industry and contributed, directly or indirectly, to it in greater measure than any other. Indeed, Muskegon holds a high place in the history of American lumbering. It accounted for more than one-sixth of all the lumber produced in Michigan, which for nearly a decade was the leading state in that industry. So gigantic was lumbering at Muskegon and so profitable was it that in three decades, 1860-1890, chopping, sawing, and burning had leveled the magnificent pine forests of the Muskegon River Basin, leaving burned-over sand flats and hills in their wake.

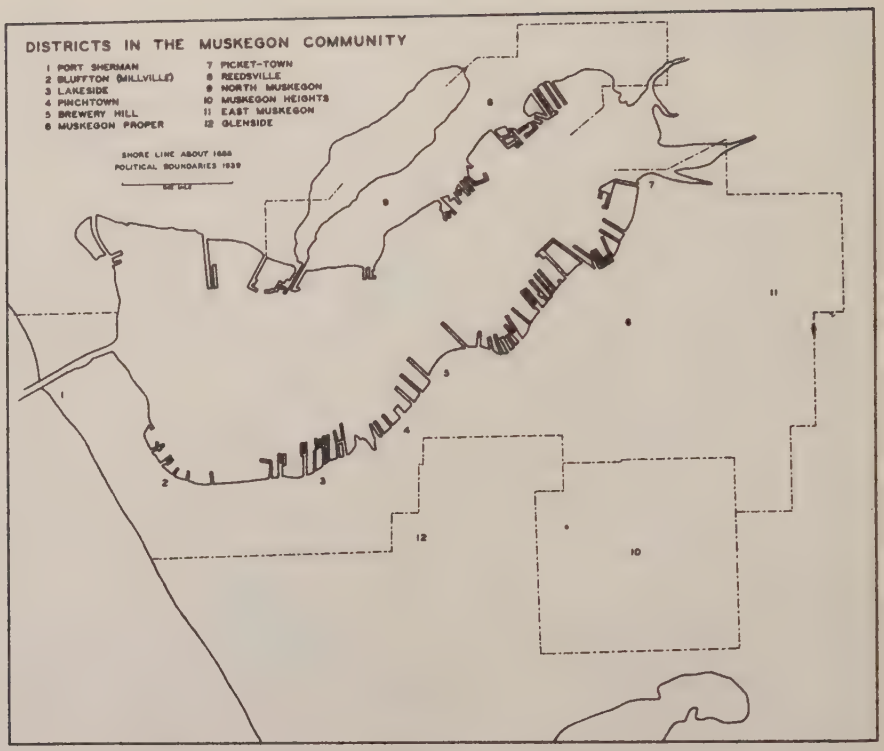

Fig. 3.--Districts in the Muskegon community

Muskegon Lake forms a harbor that is roomy, sheltered, and deep. The physiographic history of the lake is linked intimately with that of the Great Lakes. Recent research[1] gives evidence that the lake basin was eroded by the Muskegon River when the level of Lake Michigan was at least sixty-five feet lower than it is at the present time. When the level rose, an estuary was formed and in time was separated from Lake Michigan by a belt of dunes. The configuration of the present land-locked harbor resulted (Fig. 4).

In Muskegon and its environs, the surface is a smooth, nearly flat plain, most of which lies from ten to fifty feet

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[1]O. F. Evans, "Origin of the Coastal Lakes of Western Michigan," The Geographical Review, XXVII (1937), 136 ff.

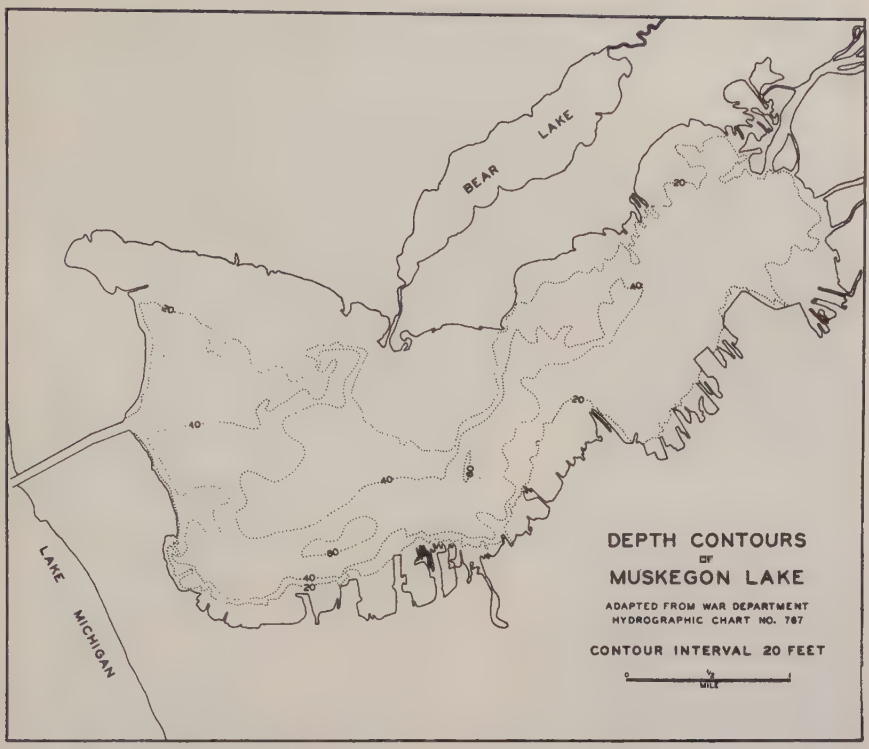

Fig. 4.--Depth contours of Muskegon Lake

above the level of Muskegon Lake (Fig. 5). The plain formed part of the floor of Lake Chicago, pro-glacial ancestor of Lake Michigan. The flatness of the land has lent itself to a relatively simple pattern of streets. They are aligned in part to the shore of Muskegon Lake, in part to the cardinal points of the compass. The flatness of the land also has minimized grading in preparation for the construction of buildings, streets, highways, and railroads. Underlying the sands of the lake plain are approximately two hundred feet of glacial drift composed largely of sands but to some extent of gravels and lenses of clay. This material has afforded an abundant supply of water to the community and has made the construction of cellars an easy matter.

Since its establishment, Muskegon proper, in its expansion, has tended to cling to the shore of the lake. The harbor

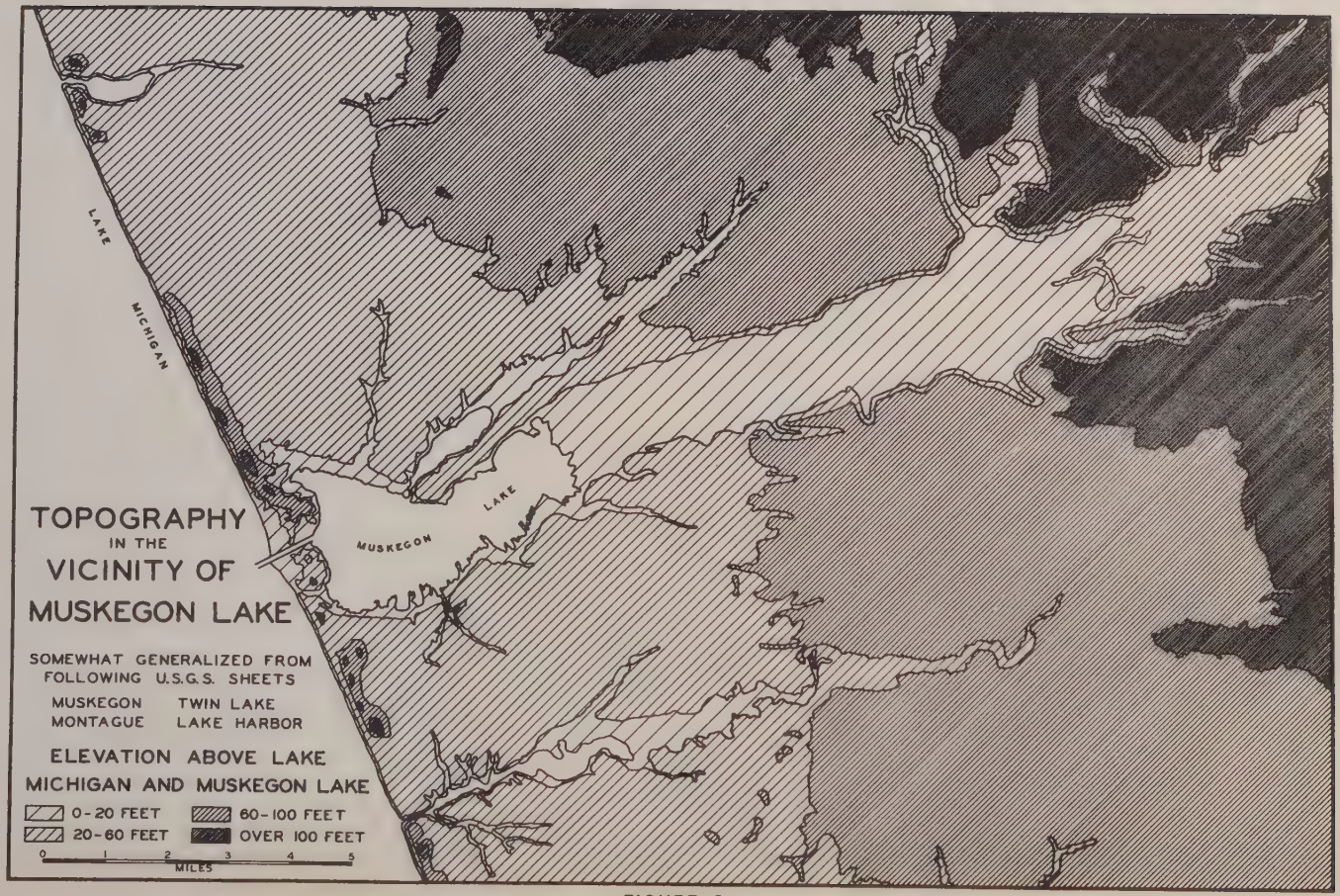
LAKE
MICHIGAN
MUSKEGON
LAKE
TOPOGRAPHY
IN THE
VICINITY OF
MUSKEGON LAKE
SOMEWHAT GENERALIZED FROM
FOLLOWING U.S.G.S. SHEETS
MUSKEGON
MONTAGUE
TWIN LAKE
LAKE HARBOR
ELEVATION ABOVE LAKE
MICHIGAN AND MUSKEGON LAKE
0-20 FEET
20-60 FEET
60-100 FEET
OVER 100 FEET
0 1 2 3 4 5
MILES

FIGURE 5

has been the heart of the urban organism. In contrast, Muskegon Heights has developed around a factory district dependent upon rail transportation. Railroads have been the center of economic activity there.

Four distinct stages in the evolution of Muskegon have been recognized. The coming of the first permanent settlers was followed promptly by the beginning of small-scale lumbering, which characterized the first stage. A sharp increase in the demand for lumber during the 1850's greatly stimulated the industry and inaugurated the second stage. The third stage, introduced by a sudden decline in lumbering, was marked by frantic efforts of civic leaders to find new industries. When it became necessary to bring in lumber to supply local demands and when the newly secured factories showed signs of vigor, the fourth and last stage had its beginning.

A separate chapter has been devoted to the developments in each stage. A final chapter suggests probable trends in the immediate future of Muskegon.

CHAPTER I

THE PIONEER STAGE

Muskegon was founded some years before conditions seem to have warranted a settlement on the site. The first permanent settlers were squatters, who occupied timbered tracts near the lake before the area was opened for sale by the Government. They built several diminutive sawmills, all of which proved unsuccessful; there was little demand for lumber, the chief local resource. Accordingly, the population grew slowly, and Muskegon remained for years an outpost community in a vast forest wilderness.[1]

Explorers and fur traders had camped on the site of Muskegon time and again through decades before the arrival of the first permanent settler. As early as 1812,[2] traders had built log cabins there to serve their needs during the winter trading season. In 1834, Louis B. Badeau purchased one of the cabins and became the first permanent settler.[3] Year by year, other venturesome pioneers established their homes there.

Most of the earlier settlers sought preemption rights to the public lands they occupied.[4] Some of them had been fur traders until about 1836, at which time the Muskegon valley lost most of its Indian population under provisions of a treaty between the natives and the Federal Government.[5] The trade in furs thereafter

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[1] A. Hadden, "The Story of Muskegon" (Original manuscript, Hackley Library, Muskegon, Michigan, 1926), p. 5.

[2] In that year, Jean Baptiste Recollet established a trading post near the mouth of Bear Lake. I. Edgar Jones, Muskegon (Muskegon, Michigan: International Publishing Co., 1888), p. 55.

[3] Edward B. Dana, "Muskegon Fifty Years Ago," Michigan History Magazine, XVI (Autumn, 1932), 414.

[4] John T. Blois, Gazetteer of the State of Michigan (Detroit: S. L. Rood & Co., 1840), pp. 320 f.

[5] Charles Moore, History of Michigan (Chicago: Lewis Publishing Co., 1915), I, 389.

diminished rapidly, and those traders who remained at the lake planned to exploit the nearby timber resources. Newcomers were lured by information which surveyors and traders had spread regarding the potential value of the dense stands of splendid timber in the valley. All logging and lumbering operations before 1839 were illegal, for not till then did the Government put the forestlands of the region on sale.

The Evolution of a Backwoods Community

In common with many other early settlements, Muskegon developed at a junction of land, river, and lake routes. For many years the settlers there relied largely upon river and lake transportation. Roads were few and poor and railroads long were lacking. The river was usable as a highway from the interior in spring, when the water was high, and the harbor afforded superior facilities for lake vessels making Muskegon a port of call.

The early community at Muskegon Lake consisted of four tiny settlements--Millville, Lakeside, Muskegon, and North Muskegon--each separated from its nearest neighbor by a mile or more of timberland (Fig. 3). The nucleus of each of them was a sawmill. At the outset, the site of each hamlet was a clearing of only a few acres on the shore of the lake, but as logging operations progressed, a widening crescent of stumps appeared between the settlement and the encircling forest.

The center of development of the early community was along the south shore of Muskegon Lake; three of the four hamlets of the pioneer stage arose there. A number of factors favored settlement there rather than along the north shore. The early settlers came from the south by land. The sources of supplies and the seats of county and state government lay to the south, and roads affording access to them in those days terminated on the south side of the lake. The possibility of a bridge across the swamp-covered flats of the Muskegon River was remote.

Millville (later Bluffton) was slightly larger than any of its neighbors through much of the pioneer stage (1838-1853).[1] The margin of leadership, though small, accrued from greater mill activity there, from the focalizing influence of the sole post

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[1]Lowell B. Dana, "Unification of Muskegon" (Original manuscript, Hackley Library, Muskegon, Michigan, 1926), p. 3.

office[1] at the lake, from proximity to Lake Michigan, and from location at the terminus of a footpath along the beach--until 1846 the only land route between Muskegon Lake and southern Michigan.

Muskegon surpassed Millville in size near the close of the pioneer stage. Situation at the head of Muskegon Lake probably was the most important factor in its rise. Its hinterland was larger than that of any other hamlet at the lake. Early agricultural settlement of the southern and southeastern parts of the hinterland, together with the lack of a bridge across the Muskegon River, favored the southeastern shore of the lake as the center of the community. Other elements in its growth were the construction of new sawmills there; the acquisition of a post office; the completion of the first intercommunity wagon road, with its terminus there (Fig. 6); and location near the mouth of the Muskegon River, where logs, driven down the stream in increasing numbers, could be handled advantageously.

The small population and primitive mode of life at the lake are reflected by the fact that there was no bank,[2] no public cemetery,[3] no daily mail service,[4] no church,[5] and no newspaper[6] until 1853. Mail came from Grand Rapids via Ravenna only once a week until about 1848, when tri-weekly service was inaugurated. The recording of the first plat of streets,[7] the construction of the first schoolhouse,[8] and the arrival of the first resident

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[1]L. H. Conger, "Pioneer Days in Muskegon" (Original manuscript, Hackley Library, Muskegon, Michigan, 1925), p. 10.

[2]Henry H. Holt, "The Centennial History of Muskegon," Michigan Pioneer Collections, I (1874-76) (Lansing, Michigan: Michigan Historical Commission, 1877), 299.

[3]Ibid. [4]Ibid.

[5]Jones, op. cit., p. 63.

[6]Greater Muskegon Chamber of Commerce, A Civic and Industrial Survey of the Muskegon Area and Western Michigan (Muskegon, Michigan: Greater Muskegon Chamber of Commerce, 1931), p. 7.

[7]Leo C. Lillie, Historic Grand Haven and Ottawa County (Grand Haven, Michigan: A. P. Johnson Co., 1931), p. 157.

[8]H. L. Wheeler, "Stage Coach and Iron Horse in Muskegon" (Original manusoript, Hackley Library, Muskegon, Michigan, 1924), p. 3.

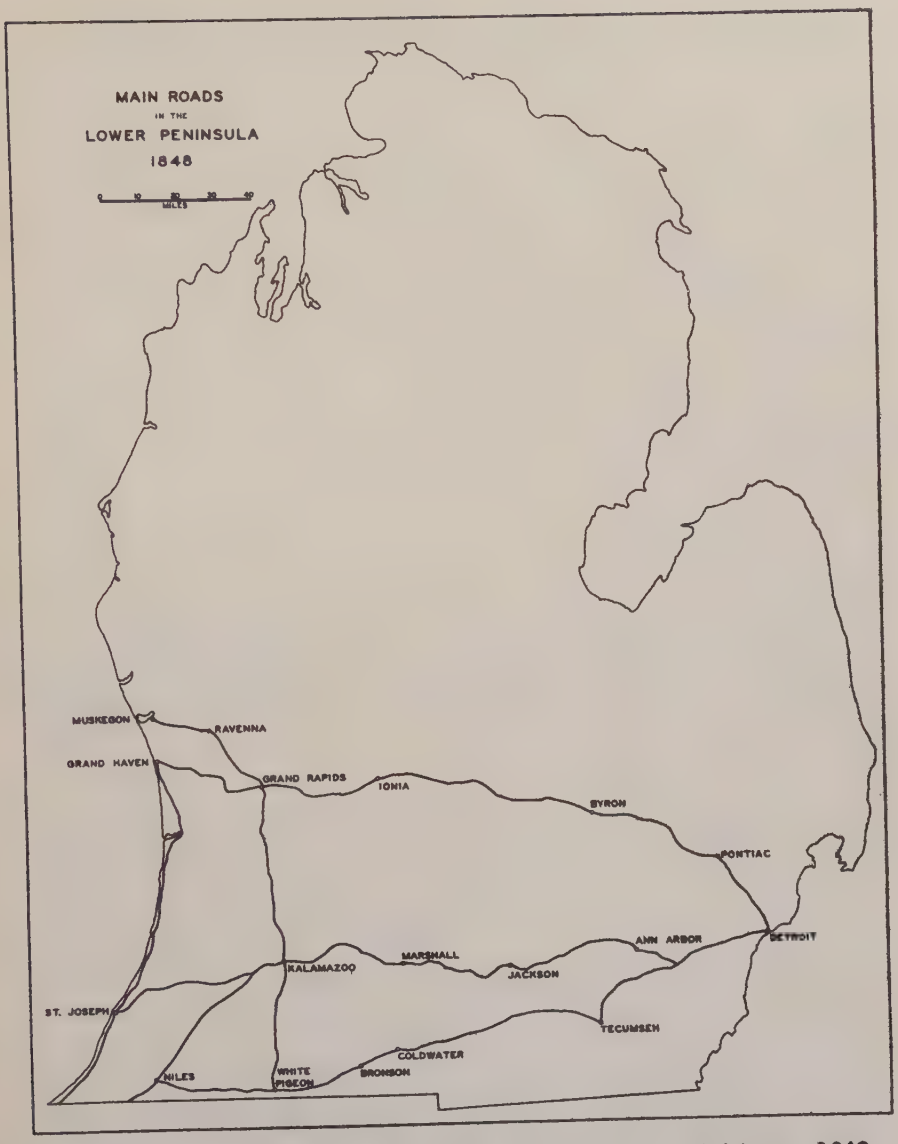

Fig. 6.--Main roads in the Lower Peninsula of Michigan, 1848

physician[1] were significant events of 1849. Throughout its pioneer stage (until 1853), the community was composed of the four clusters of crude dwellings, surrounded by brush, and a few sawmills, minute in comparison with those of a later date. The settlements differed but little in size, and their combined populations did not exceed four hundred at any time before 1853.

Lumbering, the Motive for Settlement

To profit from their speculations in timberland, the early settlers at Muskegon needed one or more sawmills. Since no water-power sites were available, steam-driven mills were essential. The first mill was begun in January, 1837,[2] but its completion was delayed for some months by the panic of that year. Early in 1838, a second mill was put into operation and in 1839, a third.[3] All three mills were in operation before any land in the Muskegon valley was sold by the Government.

The sites on which the sawmills were built apparently had no advantages over most of the remainder of the lower lands which nearly surrounded the lake and afforded numerous usable sites. In a few places those lands were marshy or covered with dunes, and so were unattractive. Logs floated down the river could be towed to any point on the lake shore. Facilities for shipping lumber could be provided readily on almost any part of the lake front.

The patterns of buildings and grounds surrounding the sawmills were similar. Grouped around each mill were a blacksmith shop, a stable, a lumberyard, a dock, a small general store, and a cluster of dwellings. The mill and lumberyard were at or near the edge of the lake, close to the dock, in keeping with the dependence of the millmen upon transportation by water. Near the mill on the landward side were the dwellings. There were houses to accommodate the married workers and their families and one or

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[1] Michigan Pioneer and Historical Collections, XXIX (1899-1900) (Lansing, Michigan: Michigan Historical Commission, 1901), 96.

[2] Michigan, A Booklet Prepared by the Public Domain Commission and the Commission of Immigration (Lansing, Michigan: Commission of Immigration, 1914), p. 103.

[3] Roy E. Ashley, "Sawdust Days--The Rise and Fall of Lumbering" (Original manuscript, Hackley Library, Muskegon, Michigan, about 1924), p. 2.

more boarding-houses for unmarried men. In each mill settlement there probably were fewer than twenty buildings, all of them frame structures and most of them small and unpainted.

TABLE 1

NUMBER AND CAPACITY OF SAWMILLS AT MUSKEGON, 1840-1890*

	Number of Mills	Daily Capacity of All Mills (Bd. Ft.)	Range in Daily Capacities of Mills (Bd. Ft.)
1840	3	13,000	
1850	6	60,000	
1860	13	351,000	15,000-38,000
1863	15		
1875	26	2,048,000	30,000-150,000
1880	30		
1884	37	5,500,000	50,000-250,000
1890	35		55,000-300,000
1896	3		

*Sources: Ashley, "Sawdust Days." Conger, "Pioneer Days in Muskegon." W. M. Harford, Muskegon and Its Resources (Muskegon, Michigan: Harford & Latimer, 1884). George W. Hotchkiss, Lumber and Forest Industry of the Northwest (Chicago: George W. Hotchkiss & Co., 1898).

The pioneer stage in lumbering at Muskegon was characterized by small-scale operations. The fact that three mills began commercial production between January, 1838 and the summer of 1839 might seem to have foreshadowed an active development of the industry from the outset. Growth, however, was slow. Even at the end of the stage (1853), there were only six mills on the shore of the lake, and their combined capacities were only 60,000 board feet per day (Table 1). The demand for lumber was small, and sawmill operators realized little or no profit. Overproduction resulted from the restricted market, the abundance of labor seeking employment, keen competition between the several mills, and the large acreage of pine timber readily accessible for logging purposes.

During the early part of the pioneer stage of development, the mills at Muskegon were supplied with logs most of which doubtless were obtained from the immediate neighborhood. With the exhaustion of the local supply about 1841, timber fringing the

banks of the lower river was cut, for less labor was involved in driving logs down the river to the mills than would have been needed to move them more than very short distances on land.[1] Even though several mills were in operation on Muskegon Lake, there was no congestion on the river, for the total number of logs transported annually was small.

Logging in the Muskegon valley was selective in the early days. Only easily accessible timber was cut, and only pine trees of large size and excellent quality were chosen. There was little or no demand for hardwoods, for they could not be worked so readily as pine with the simple tools of the time; neither could they be floated so easily.

"Timber stealing" in one form or another was common in the Muskegon valley until about 1855. Before the land near Muskegon Lake and the Muskegon River was placed on the market by the Government, no effort was made by governmental officials to prevent the construction of mills on it or the removal of logs from it. Even after much of the land had been sold, it was common practice to locate largely by guesswork the property boundaries of timbered tracts.

Until 1849, Chicago was practically the only outside market for lumber manufactured at Muskegon.[2] Even in Chicago, the demand for lumber was small, for the sales area was confined to the city and its vicinity. Not until the prairies of Illinois and Iowa were settled, mostly after 1850, did the pine forests tributary to Muskegon begin to bring wealth to the manufacturers of lumber there. Not until railroads traversed the prairies did the heyday of logging and milling at Muskegon dawn.

Intracommunity Functions

Industry other than lumbering was negligible in early days in Muskegon. The products of the machine and blacksmith shop associated with each sawmill might be construed as manufactures. The only other industrial products were those of a flour mill, which began operations on the north shore of Muskegon Lake in 1852.

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[1]National Historical Association, Historic Michigan, III, Part I, ed. by James L. Smith (Lansing, Michigan: National Historical Association, 1925), 103.

[2]Jones, op. cit., p. 22.

Commercial activities had advanced but little over those of trading post days. In fact, during the early years of the pioneer stage of the logging and lumbering industry, five or six small posts, holdovers from the days of fur, supplied the few staple items needed by the settlers. Later, several stores, larger than the primitive trading posts, were opened by mill owners. A settler writing in 1850 commented, "There was little commerce during the period 1838-1850."[1]

The small size of Muskegon precluded almost all developments of a public service nature. Only during the last four years of the stage was there a plat of streets. Until then, houses had been built wherever convenient, with little or no thought for a street pattern. None of the settlements was incorporated until a later date, and township officials governed the community.

Isolation of the Community

The shore of Muskegon Lake was settled years in advance of the remainder of the county and long before the upper Muskegon Basin (Fig. 7).[2] Moreover, the population of the community at the lake closely approached that of the township in which it was located. The original Township of Muskegon, formed in 1837, included an area nearly equal to that of eight standard townships. In 1852, it still contained an area approximating that of six standard townships. This lack of subdivision through years is an index to the sparseness of population in the area outside of the lakeside community. Furthermore, it reflects indirectly the isolation of the community.

Interregional relationships in this stage were simple. Muskegon was small and its trade restricted. Chicago was the chief market for its lumber[3] and the chief source of its supplies. The timbered lands near the lake and river were in turn busy scenes of logging, while the tracts farther from the waterways were of interest only to speculators. The agricultural population, even close to Muskegon, was exceedingly sparse.

Communication by land was difficult. Not until 1846 was

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[1] Ann Robinson, "Muskegon, Michigan, 1812-1915" (Original manuscript, Hackley Library, Muskegon, Michigan, 1926), p. 21.

[2] Historic Michigan, III, op. cit., 20.

[3] Lumber first was shipped to Chicago in 1839.

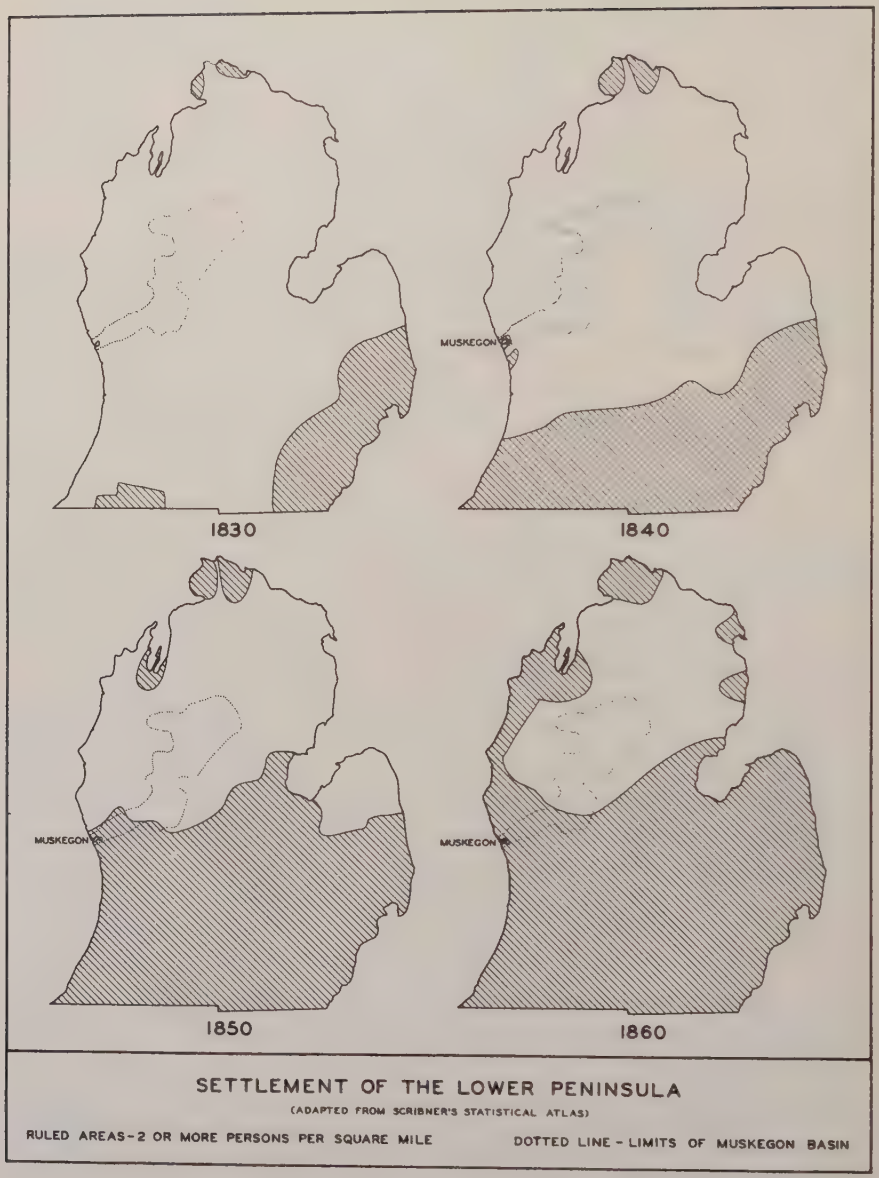

Fig. 7.--Settlement of the Lower Peninsula, 1830-1860

the community connected to any other settlement by a road (Fig. 6). In that year, Martin Ryerson opened a wagon road through the timber from Muskegon Lake to Ravenna, where it joined one that had been opened from Grand Rapids.[1] Before that time, the only land way between Muskegon and Grand Rapids had been a footpath along the beach of Lake Michigan to the mouth of the Grand River and up its valley. The road built by Ryerson was so poor that in 1849 an entire day was required for a settler to drive his team four miles along it. In reality, it was only a track among stumps and through sand or mud.[2] It was not until 1851 that a stage line began operations over this track. As late as 1853, it took one day in good weather and two days in bad weather to traverse the fifteen miles between Muskegon and Ravenna. Despite its faults, this road was the only one out of Muskegon until 1858.

Few agricultural settlers were attracted to the spreading area of logged-off land around the community. At the close of the stage (1853), less than one-tenth of one per cent of the area of the county was in farms, and those who had taken up land for agricultural purposes grew subsistence crops almost exclusively. Within the community, vegetable gardens were rare. Like many other lumber towns, Muskegon was dependent upon outside communities for most of its food.[3]

Until 1853, there was little assurance that Muskegon would survive. Thereafter, the outlook brightened.

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[1] Wheeler, op. cit., p. 10. [2] Ibid., p. 12.

[3] Salt pork, beans, and flour were staple items. The diet was supplemented with game and wild fruits and berries.

CHAPTER II

THE LUMBER STAGE (1853-1888)

Muskegon grew rapidly and steadily following the pioneer stage (Figs. 8, 9, and 10). In thirty-five years, from 1853 to 1888, lumbering there evolved from a small-scale activity in a backwoods community to the dominant industry in a vigorous urban center and from an occupation requiring few laborers to one requiring several thousand employees. It grew, too, from an industry yielding small profits to one yielding large profits and from an enterprise supplying restricted local needs to one supplying great outside markets. At its crest (1880-1888), lumbering employed more than 8,000 persons (Fig. 11), paid wages of $1,750,000 annually (Fig. 12), and turned out products valued in excess of $10,000,000[1] per year (Fig. 13).[2]

In this stage of rapid expansion, Muskegon Lake was the focus of the community and of the tributary pinelands in the Muskegon Basin (comprising 1,850,000 acres). A chain of thirty-seven sawmills lay on its shore in 1888. Millions of logs were floated down the river to its surface, where they were sorted in the booming grounds and stored until needed by the mills. The port and harbor facilities that it afforded were used in season by large fleets of lumber vessels.

Mushroom Growth of the Community

Significant changes that took place in the pattern of Muskegon were related, directly or indirectly, to the rise of lumbering there. The four small settlements of the pioneer stage increased in size. Other settlements sprang up, and by 1880 a chain of nine urban districts stretched along the shore of Muskegon Lake (Figs. 14 and 15). Each of them except Pinchtown

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[1]Had the same quantity of pine products been placed on the market in 1938, the value would have exceeded $40,000,000.

[2]Muskegon Chronicle, October 31, 1931.

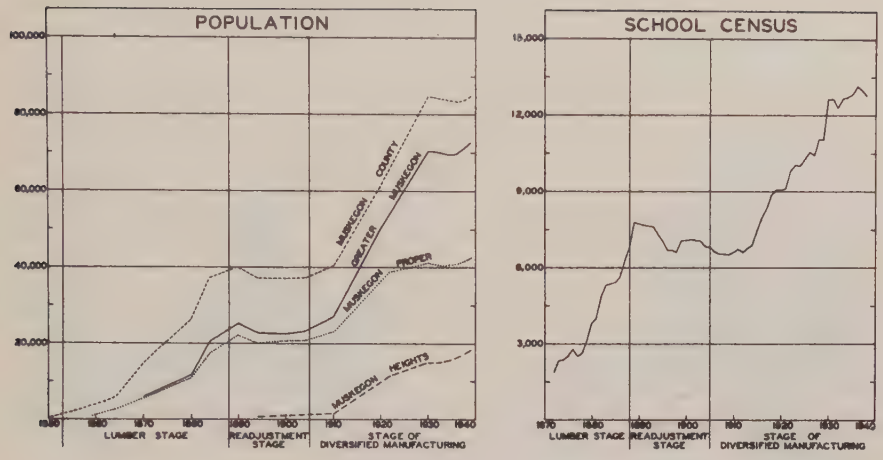


Fig. 8.--Population of Muskegon County, Greater Muskegon, Muskegon city, and Muskegon Heights, 1850-1938.

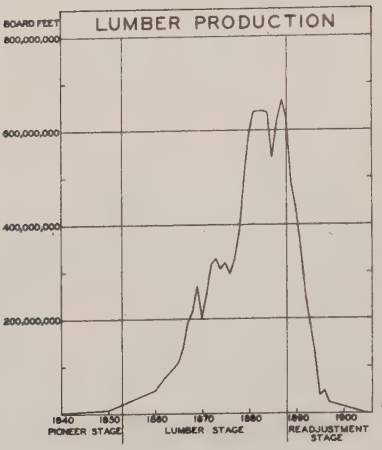
Fig. 9.--School census for Muskegon city, 1872-1938. Compare with Figure 8.

and Brewery Hill developed around one or more sawmills. The districts in the urban pattern are considered in counter-clockwise order around the lake (Fig. 3).

Port Sherman, on the south side of the harbor entrance, was settled shortly after 1850. Most of the inhabitants were sailors and fishermen, who found the location favorable to their occupations. The district had only one sawmill. After it opened in 1861, the population increased somewhat. Growth was slow, however, chiefly because of the position of the settlement on the outskirts of the community. It became a part of Lakeside village in 1883 and of Muskegon city in 1889.

Bluffton, second oldest of the districts around the lake, was established in 1837. By 1877, it had three sawmills, each of which had a cluster of houses around it. Although the settlement was the largest one at the lake throughout much of the pioneer stage, it grew slowly in this stage until the completion of the street railway in 1882. When it thus became more accessible, additional houses were constructed there. The inhabitants, mostly French Canadians, were dependent principally upon the mills. Like Port Sherman, the district became a part of Lakeside village in 1883 and of Muskegon city in 1889.

Lakeside, established in the early 1840's, also began with a mill-cluster type of residential pattern. At the height of lumbering, five large sawmills were located there. The residents, predominantly Swedish and German, were dependent upon the mills. By 1883, the settlement had grown sufficiently to



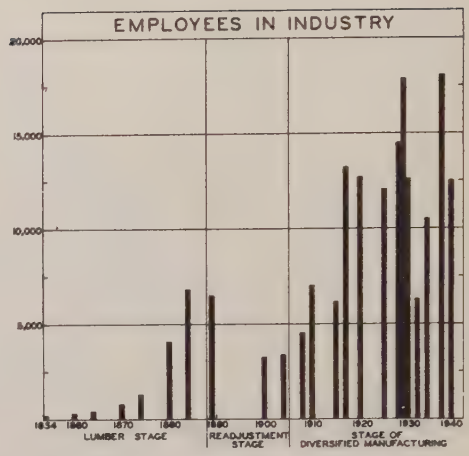


Fig. 10.--Lumber production, Muskegon, 1840-1905

Fig. 11.--Employees in industry, Muskegon, 1860-1938

warrant incorporation as a village. It was annexed by Muskegon city in 1889.

Pinchtown occupied a wedge of land between Lakeside and Muskegon proper. Its population was small throughout the lumber stage. Proximity to more populous urban districts and lack of law-enforcement helped prize-fighting, cock-fighting, and other lawless activities to thrive there. The district, having no frontage on Muskegon Lake, had no sawmills. It was annexed by Muskegon city in 1895.

Brewery Hill was located in the western part of Muskegon city and was separated from the built-up portion of the city by a strip of unoccupied land. The district included a brewery, constructed about 1870, and some thirty houses, whose occupants depended on the brewery for their livelihood.

Muskegon proper was the oldest and, in this stage, the largest of the urban districts at the lake. Its population was predominantly Scandinavian and Dutch. Seventeen sawmills, together with the principal commercial establishments of the community, provided employment for persons living in that district. Incorporation as a village in 1861 and as a city in 1869 indicates the rapid increase in population there. Favorable situational factors, noted in the preceding chapter, together with the impetus of an early start, helped the district to continue as the center of the community. In 1888, it contained nine-tenths of the population at the lake.

Picket-Town consisted of a group of shanties near the mouth of the Muskegon River. The district lay in the northeastern corner of the corporate limits of Muskegon city and was occupied chiefly by trappers and Indians, together with

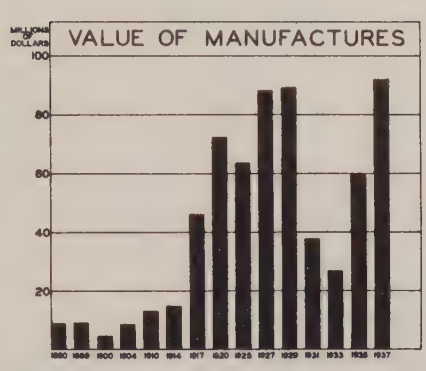


Fig. 12.--Total annual wages in industry, Muskegon, 1880-1937

Fig. 13.--Value of manufactured products, Muskegon, 1880-1937

employees of the Muskegon Booming Company. The one sawmill there was operated by that company.

Reedsville, settled in 1842, grew slowly throughout the lumber stage. Location on the outskirts of the community retarded its development. Seven sawmills, six of which were constructed between 1870 and 1880, provided employment for persons living in this district. It became a part of North Muskegon village in 1881.

North Muskegon grew slowly from 1837, when it was settled, until the decade 1870-1880, when three new mills were added to the one already there. In common with Reedsville, the district had a mill-cluster type of residential pattern. It was incorporated as a village in 1881. Ferry service connecting it with the south side of the lake helped to alleviate its unfavorable location on the edge of the community.

In the early days of lumbering, the population was divided rather evenly among the four settlements comprising the community. In the later years of the lumber stage, approximately eighty per cent of the population at the lake was in Muskegon proper (Fig. 8), ten per cent of it in Lakeside village (which included the districts of Lakeside, Bluffton, and Port Sherman), and ten per cent of it in North Muskegon village (which included the districts of North Muskegon and Reedsville). The population of Muskegon proper increased seventeen times between 1860 and 1890, a period of time nearly coinciding with the climax stage of logging and lumbering. In the same three decades, Muskegon proper rose in rank of population from forty-second place to fifth place among

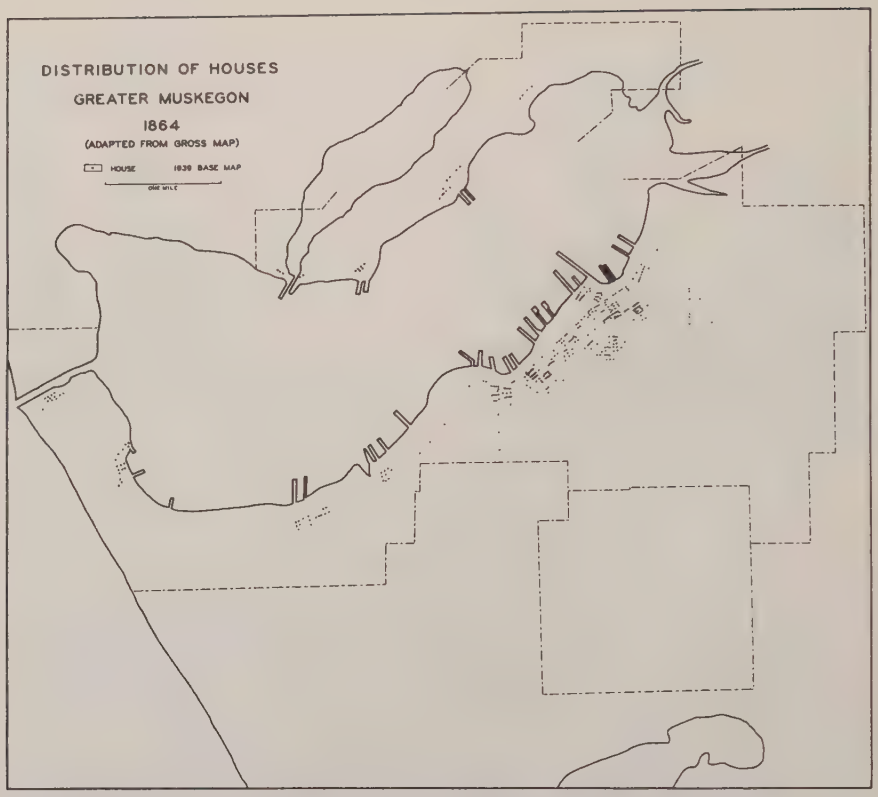


Fig. 14.--Distribution of houses, Greater Muskegon, 1864

the villages and cities of Michigan.[1] Although the lakeside community grew from 400 to nearly 26,000 during the lumber stage, most of the residents lived near the lake; only along the southeastern part of the shore did the urban area extend inland more than a half mile.

Scarcely a year of the lumber stage passed without the construction of at least one sawmill on the lake front. Until 1860, the mills were well scattered around the shore. From 1860 to 1870, most of the new ones were constructed in Muskegon proper.

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[1] Headlight Flashes along the Grand Trunk Railway System, Muskegon, Michigan, An Historical Treatment Prepared by H. L. Hauser, Editor, and by the Muskegon Chamber of Commerce (Chicago: Chicago Railroad Publishing Co., 1897), p. 3.

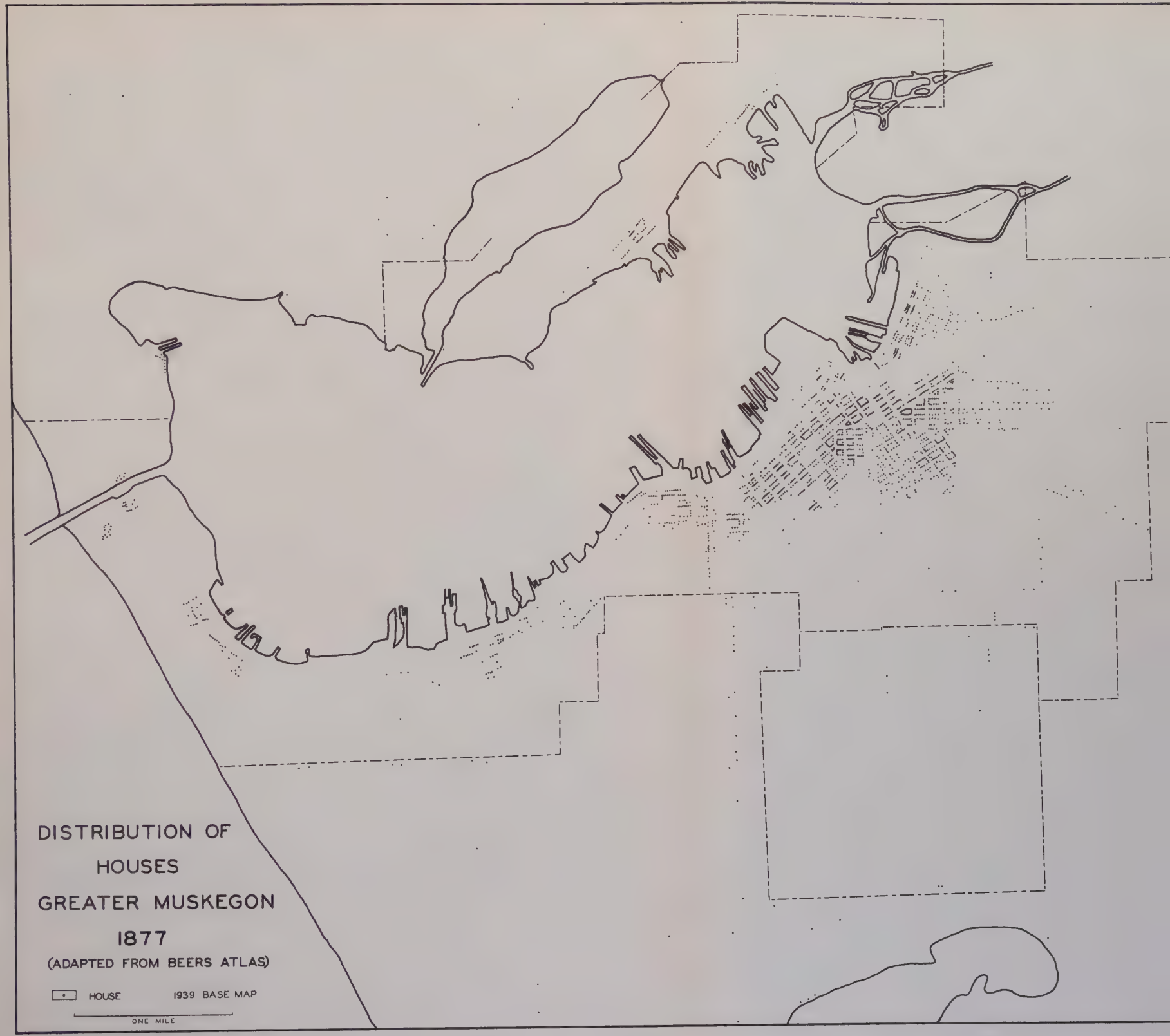
DISTRIBUTION OF
HOUSES
GREATER MUSKEGON
1877
(ADAPTED FROM BEERS ATLAS)
HOUSE
1939 BASE MAP
ONE MILE

FIGURE 15

In the next decade (1870-1880), approximately three-fourths of the new sawmills were opened along other parts of the lake front. Many of them were located in Reedsville and Lakeside, both of which were contiguous to the city. It is noteworthy that by this time, a marked concentration of mills had developed near the head of Muskegon Lake. Only a few new mills were put in operation in the final decade of peak lumbering, 1880-1890, and most of them were constructed in Muskegon proper. Seventeen of the thirty-seven mills at the lake in 1888 were located there (Fig. 16).

The residential districts of the community presented, in general, a drab appearance in lumbering days. Most of the houses were small, flimsy, unpainted shacks of two or three rooms and were owned by millmen. As in the pioneer stage, boarding-houses for unmarried workers persisted in the vicinity of many of the mills (Fig. 17). Most of the residential districts were located on cutover land having sandy soil and little vegetation of any kind. The absence of lawns and gardens was striking. There was a section of better houses in the southwestern part of Muskegon city. Most of them belonged to men who had accumulated some wealth in lumbering and who had taken advantage of low construction costs to build large residences. It is probable that the first few persons who chose sites for houses in this section did so in part because the elevation there was slightly higher than that in other districts of the urban area. Moreover, the section contained many large oak and maple trees in contrast to the scrub growth of most other districts around the lake. It lay a convenient distance from the sawmills and the commercial district and was apart from the sections of low-class residences.

Stores, saloons, and restaurants were the principal classes of establishments in the commercial pattern. The stores were scattered throughout the community and most of them were owned by sawmill operators. The merchandise was purchased in Chicago[1] and brought to Muskegon by returning lumber vessels. Saloons and restaurants concentrated at Ottawa and Western Avenues (Fig. 18) formed a center of carousal.[2] They were frequented by

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[1]Thomas D. Gilbert, "Development of Western Michigan," Michigan Pioneer and Historical Collections, XVII (1890) (Lansing, Michigan: Michigan Historical Commission, 1891), 322.

[2]Wheeler, op. cit., p. 5.

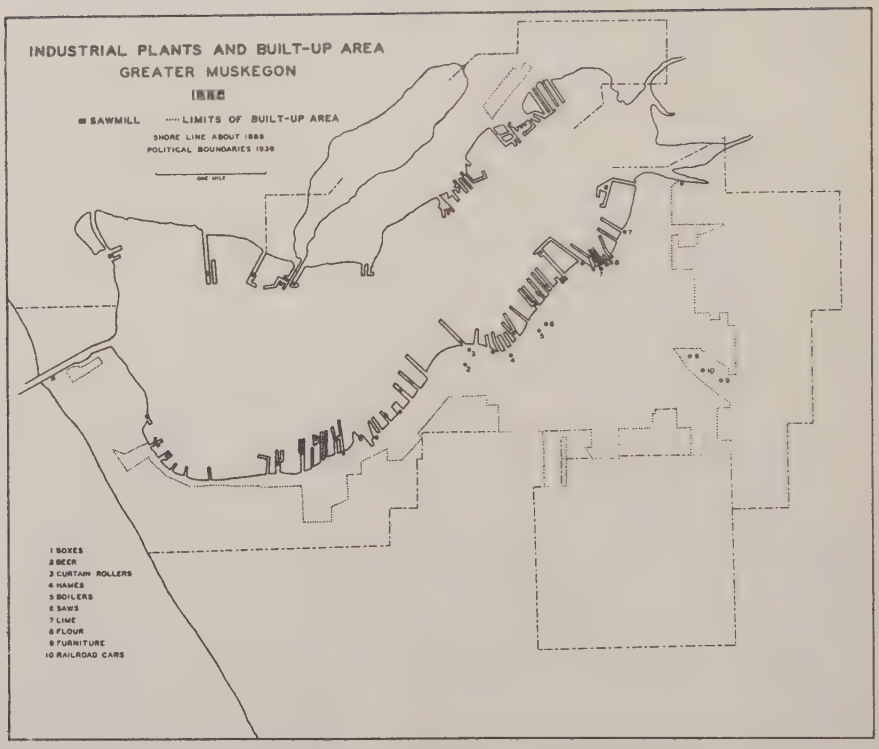

Fig. 16.--Sawmills, other industrial plants, and built-up area, Greater Muskegon, 1888.

lumberjacks and by crews of the lumber fleets. At times, they remained open day and night.[1] Gambling, hard drinking, and other vices gained a strong foothold in Muskegon because of the magnitude of lumbering there.

Developments in municipal and utility services accompanied growth in population and industry. Surfacing materials for the streets of the community were furnished by the sawmills. New streets were sandy. When sufficient use warranted improvement of them, sawdust was spread along the tracks. Indeed, sawdust was the principal surfacing material until about 1880, except on well-traveled streets, where three-inch pine boards were laid edge to

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[1] Ibid.

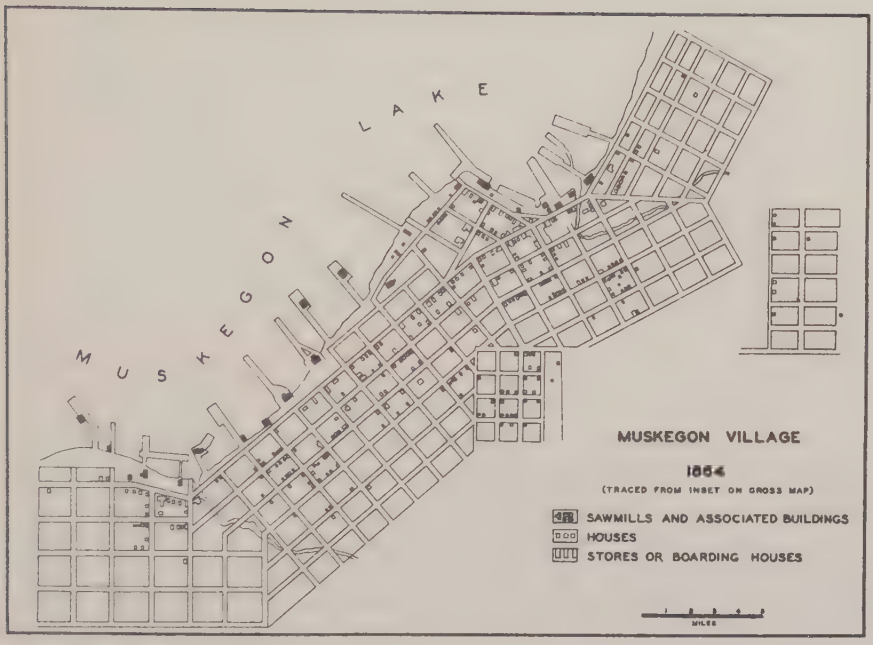

Fig. 17.--Land utilization, Muskegon village, 1864

edge. Cedar blocks, produced locally, were used to pave more than ten miles of streets between 1882 and 1887.[1]

An extensive fire in 1874[2] demonstrated the need for a municipal water system. The construction of water mains, deep wells, and a pumping station began within a few months. The installation of plumbing and the utilization of municipal water proceeded slowly during the lumber stage. Not until 1882 was a sewer system begun.[3]

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[1] W. M. Harford, Muskegon and Its Resources (Muskegon, Michigan: Harford & Latimer, 1884), p. 96.

[2] Seventy business establishments and 200 residences burned. The comparative magnitude of the loss is emphasized by the smallness of the population at that date--8,600. Ibid.

[3] Historic Michigan, III, op. cit., 96.

The installation of telephone service in 1879[1] and the construction of a street railway in 1882 were adjustments to the linear form and to the increasing population of the community. The first unit of tracks extended from the railroad depot in Muskegon city to Bluffton--a distance of four and a half miles. With its horse-drawn equipment, the line served hotels, mills, and residential districts on the south side of the lake.[2]

Twenty-one newspapers began publication between 1853 and 1888. Only one of them survived for more than four years. The presence of many different national, political, and religious groups in the community accounts in part for the large number of attempts.[3]

The Port and the Harbor

An obscure port throughout the preceding stage, Muskegon rose during this stage to second place among the ports on Lake Michigan.[4] Most of the enormous output of the sawmills was sent to Chicago and Milwaukee by boat,[5] a procedure to which the bulky lumber lent itself easily and cheaply. Throughout much of the stage, from 100,000,000 to 500,000,000 board feet of lumber were shipped annually from the port, much of it at rates as low as one dollar per thousand board feet.[6] Between 1879 and 1889, upwards of three thousand vessels cleared the port annually, most of them with cargoes of lumber (Table 2). It was not uncommon for fifteen or more boats to be docked at the loading piers simultaneously.[7]

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[1]Of the 260 telephones in operation in 1884, 200 were in mills and stores and but 60 in residences. Wheeler, op. cit., p. 37.

[2]Lowell B. Dana, op. cit., p. 11.

[3]"History of Muskegon Newspapers" (Original manuscript, Hackley Library, Muskegon, Michigan, n. d.), p. 1.

[4]Chicago ranked first. In 1887, the water-borne tonnage of the port of Muskegon nearly equaled the combined tonnages of all other ports on the east coast of Lake Michigan.

[5]The sailing vessels and the steamers that made the harbor during this stage were owned either individually or in small fleets. Sawmill operators were the largest group of owners.

[6]Carroll S. Daniels, "Canoe, Schooner, and Barge" (Original manuscript, Hackley Library, Muskegon, Michigan, 1924), p. 8.

[7]Ibid., p. 9.

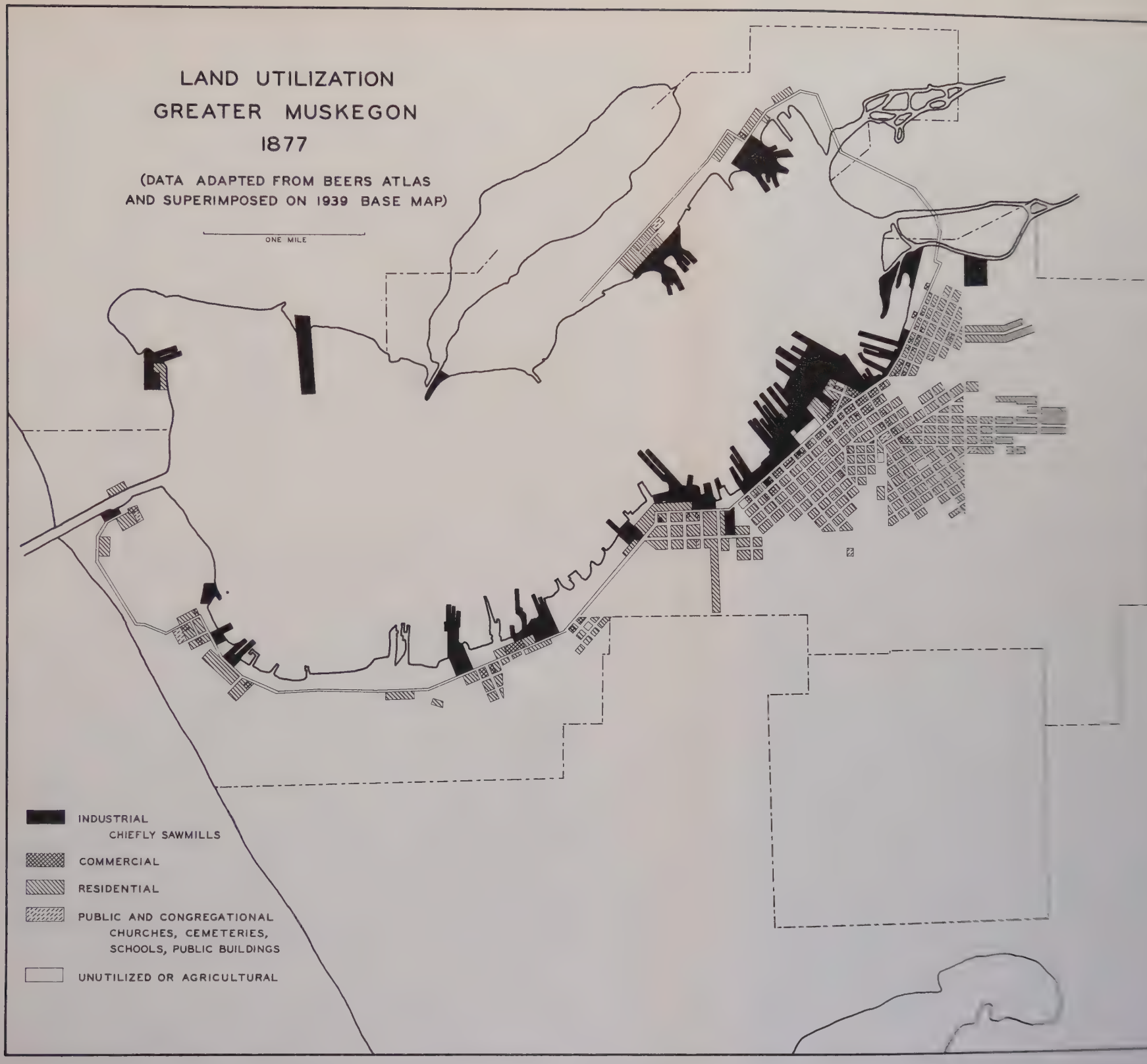
LAND UTILIZATION
GREATER MUSKEGON
1877
(DATA ADAPTED FROM BEERS ATLAS
AND SUPERIMPOSED ON 1939 BASE MAP)
ONE MILE
INDUSTRIAL
CHIEFLY SAWMILLS
COMMERCIAL
RESIDENTIAL
PUBLIC AND CONGREGATIONAL
CHURCHES, CEMETERIES,
SCHOOLS, PUBLIC BUILDINGS
UNUTILIZED OR AGRICULTURAL

FIGURE 18

TABLE 2

PORT STATISTICS, MUSKEGON, 1869-1888*

	Number Vessels Entered and Cleared	Tonnage
1869	4476	785,349
1870	5510	902,592
1871	4449	677,211
1872	4952	852,409
1873	4947	863,384
1874	5049	922,829
1875	4969	1,029,055
1876	6147	1,237,003
1877	4305	861,546
1878	2377	834,198
1879	5186	1,036,311
1880	8548	1,560,641
1881	7327	.....
1882	6689	.....
1883	6909	.....
1884	7106	.....
1885	6112	.....
1886	5543	.....
1887	6314	.....
1888	6272	.....

*Source: Annual Reports of Chief of Engineers of the United States Army.

Many persons traveled between Muskegon and Chicago by lumber boats, most of which had accommodations for a few passengers. Rates were reasonable and sailings were frequent.

Muskegon Lake, from twenty to seventy feet deep over most of its area, was an excellent natural harbor (Fig. 4). Until 1863, however, the entrance was shallow; it rarely was more than eight feet in depth, and occasionally it could be waded. Moreover, its position shifted from time to time. Only the smaller schooners attempted to enter the port. In 1863, the community raised $40,000 locally to build revetments along the channel between Muskegon Lake and Lake Michigan and to construct protecting piers three hundred feet long on both sides of the entrance. Lumber produced locally was utilized in these improvements. With their completion, the channel was dredged to a depth of thirteen feet, a depth sufficient to accommodate the larger schooners,

even when they were loaded. Thereafter, the tonnage clearing the port increased. Shortly, a bar formed at the channel entrance and reduced the depth of water there to only six or seven feet. In 1867, the Federal Government, making its first appropriation for the harbor, remodeled the piers and extended them into deep water beyond the bar.[1] Subsequent extensions were necessitated by renewed growth of the offshore bar. Since the width between the piers proved inadequate in stormy weather, the Government widened the channel by replacing one pier in 1882.[2] Thus the harbor was developed to keep pace with the demands which the port made upon it.

Expansion of Lumbering

Lumbering at Muskegon grew rapidly from 1853 to 1888 (Fig. 10). The site and situational factors at Muskegon Lake were advantageous; the tributary area of pine in the Muskegon Basin, covering 2,880 square miles, was extensive; and the market for lumber was expanding rapidly. The number of mills increased nearly threefold (from thirteen to thirty-seven) between 1860 and 1884, the time of greatest development in lumbering.[3] During the same period, the combined daily capacities of all mills multiplied nearly sixteenfold (Table 1). Whereas the early sawmills each needed only six or eight employees, those operating at the height of lumbering each required at least eighty employees.[4]

Practically all of the 30,000,000,000 board feet of lumber, the estimated total output for Muskegon, was produced during the lumber stage (Table 3). The average annual output of the peak years, 650,000,000 board feet (Table 4), would have filled a train 406 miles long, with 10,000 board feet per car,[5] or would have been sufficient for a road sixty feet wide and two inches

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[1] The initial appropriation of $59,000 was the first of several amounts to be expended by the Federal Government for the improvement of the harbor. Robinson, op. cit., p. 22.

[2] Annual Report of Chief of Engineers of the U. S. Army, 1897 (Washington: Government Printing Office, 1898), p. 2923.

[3] Ashley, op. cit., p. 3.

[4] Ibid.

[5] Muskegon Chronicle, July 13, 1886 states that this was an average load of lumber for a freight car.

thick between Muskegon and New York City.[1]

TABLE 3

ESTIMATED TOTAL PRODUCTION OF LUMBER BY CITIES AND DISTRICTS IN MICHIGAN TO 1897*

District	Production
Saginaw valley	31,000,000,000
Muskegon	30,000,000,000
Green Bay, Michigan	11,500,000,000
Huron shore	11,225,000,000
Manistee	9,000,000,000
Others, none of which exceeded 6,000,000,000 board feet	68,750,000,000
Total	161,475,000,000

*Source: Hotchkiss, Lumber and Forest Industry of the Northwest.

Site and situation.--Muskegon possessed such unusual advantages of situation for the development of lumbering that it became the leading center of the industry along the entire western coast of Michigan. Situation near the southwest corner of the vast pinelands of the Lower Peninsula (Fig. 19) gave it an advantage of nearness to Chicago. It was favored, too, by location at the mouth of a southwesterly flowing stream, since logs traveling to the mills were moving in the general direction of the market. Perhaps of greatest significance was its location at the mouth of the largest river system in western Michigan (Fig. 19), a position that afforded access to a large supply of timber. Furthermore, in the basin of the Muskegon River, white pine, one of the more valuable species for lumber, predominated.

Without exception the sawmills of Muskegon were located on the shore of Muskegon Lake. The lake made contact on the one hand with the river, down which logs were floated and on the other with Lake Michigan, a convenient waterway to markets. Its surface, covering eight square miles, served both as a harbor for lumber vessels and as a storage place for thousands of logs (Fig. 2). Almost anywhere along the shore, docks could be built easily into water deep enough to accommodate the larger lumber vessels

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[1]Robert H. Baker, The City of Muskegon (Muskegon, Michigan: B. F. Conrad & Co., 1889), p. 54.

TABLE 4

LUMBERING STATISTICS, MUSKEGON, 1840-1897[a]

	Lumber Production (Board Feet)	Shingle Production (Number)	Logs Delivered by Booming Company (Board Feet)
1840	1,800,000[b]	.....	.....
1850	8,400,000[b]	.....	.....
1860	49,100,000	.....	.....
1861	.....	.....	.....
1862	75,000,000	.....	.....
1863	.....	.....	.....
1864	98,400,000[b]	.....	96,045,814
1865	110,900,000[b]	.....	108,505,705
1866	139,800,000[b]	.....	137,468,700
1867	290,900,000[b]	.....	288,502,200
1868	216,100,000[b]	.....	213,692,600
1869	270,200,000[b]	.....	267,789,900
1870	201,200,000[b]	6,500,000	198,862,000
1871	252,400,000	.....	250,000,000
1872	316,031,400	.....	315,035,000
1873	329,689,000	22,750,000	376,000,000
1874	307,200,000	24,000,000[b]	224,561,527
1875	320,400,000	28,100,000	309,538,418
1876	296,800,000	32,000,000	290,525,719
1877	327,300,000	34,700,000[b]	312,285,591
1878	388,991,000	40,100,000[b]	348,990,055
1879	504,555,000	50,300,000[b]	432,431,679
1880	591,201,649	58,003,000	436,675,446
1881	640,089,429	89,000,000	565,846,557
1882	643,780,512	121,398,250	528,496,928
1883	646,263,886	310,491,500	582,540,840
1884	639,952,568	329,525,000	585,000,000
1885	543,409,637	383,844,500	432,172,070
1886	620,334,164	458,100,000	550,000,000
1887	665,449,921	520,531,750	.....
1888	626,588,166	501,157,000	.....
1889	490,912,236	347,201,750	.....
1890	433,960,553	364,721,000	.....
1891	337,156,763	191,117,250	.....
1892	253,716,426	169,392,000	.....
1893	131,286,000	75,953,000	.....
1894	127,510,272	62,252,000	.....
1895	40,907,946	53,825,000	.....
1896	48,249,379	40,676,750	.....
1897	24,650,000	41,900,000	.....

[a]Sources: Muskegon Chronicle. Hotchkiss, Lumber and Forest Industry of the Northwest.

[b]Estimates based on production figures for certain mills, the capacity of all mills, and the board feet of logs delivered.

Fig. 19.--Major drainage basins of the Lower Peninsula and area in which pines formerly predominated.

of the time. Every mill constructed and maintained its own dock.

Development of logging and mill equipment.--Logging railroads, introduced in the Muskegon valley in 1877,[1] contributed to the success of lumbering in several ways. Logs from otherwise inaccessible tracts could be moved on them to streams or to standard railroads. Year-round logging became practicable, and the need of ice roads for the movement of logs was partially eliminated.[2] Together with standard-gauge lines, logging railroads proved useful in the transportation of hardwood logs.

A comparison of the early sawmills at Muskegon with those in operation in the 1880's reveals the great improvements made in mill machinery.[3] The sash saw[4] of the early mills was replaced by the circular saw about 1850. Two decades later, gangs of circular saws were common. During the final years of great lumber production, the circular saw was being replaced by the band saw. Other evolutionary features appeared from time to time: the hand-feed was replaced by the automatic feed; hand-lifting with cant hooks was supplanted by the nigger; the gang edger, the live roller, and the chain conveyer were introduced. The production

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[1]By the close of the lumber stage, many narrow-gauge railroads for logging purposes were operating between timbered tracts and the Chicago and West Michigan Railroad. Roscoe D. Henry, "Logging Camp Days," The Rail (August, 1924), p. 9.

[2]W. Carpenter, "The Story of the Log" (Original manuscript, Hackley Library, Muskegon, Michigan, 1926), p. 2.

[3]Harford furnished the data for the following description of a typical mill in Muskegon in 1883. Such a mill cost about $45,000. That part of the building housing the mill equipment was two stories high, 150 feet long, and 45 feet wide. Adjoining it was a boiler room 40 by 75 feet. Separated from this building was a $5,000 refuse burner, 113 feet in height and 24 feet in diameter at the base. Equipment included: 2 circular saws 5½ feet in diameter; a gang of 45 saws weighing 27 tons; a slab-cutter containing a bench of 4 saws; 4 trimming saws; several lath saws; and an edging-cutter gang with 8 saws, another with 4, and still another with 3. The motive power was supplied by a 600-horsepower engine served by 7 boilers. The capacity of such a mill was 200,000 board feet in 10 hours and 19,000,000 board feet in a sawing season of 7½ months. Docks provided storage space for 10,000,000 board feet of lumber. For fire protection, the mill had its own pumps, pipes, hydrants, and hose. In addition to the 80 persons employed in the mill, there were approximately 125 workers in the logging camps. Harford, op. cit., p. 78.

[4]This was a mechanized hand-saw, depending upon a reciprocating motion for cutting through the logs.

of shingles increased about 1881, when more efficient machinery for manufacturing them was developed (Table 4). Coincidental with the improvements in mill machinery was an increase in output per employee. In 1860, mills required one employee for each 1,000 feet of lumber sawed per day; in 1876, one for each 2,000 feet; and by the end of the stage (1888), one for each 3,000 feet.[1]

In the early days, the Muskegon mills operated only from the opening of the lake in spring until it froze over in late autumn. Later, some mills installed hot ponds[2] to permit operations to continue through the winter. During freezing weather, logs were brought in by rail, rolled into the hot ponds, and thence drawn up into the mills. Some mills installed electric lights about 1883 so that night shifts could operate.

Between 1875 and 1885, several millmen built additions to their plants to house planing mill machinery. In the latter year, the capacity of the planing mills around Muskegon Lake was 970,000 board feet per day--evidence of the magnitude of this phase of lumbering. The daily capacity of one large mill was 200,000 board feet, and that of two other mills 150,000 board feet each.[3]

Lumbering practices.--Winter logging proceeded regardless of low temperatures and in spite of deep snows which necessitated leaving high stumps (Fig. 24; pocket). These unfavorable features were more than offset by the prompt use made of early spring freshets in floating logs and by the advantages of the ice roads of winter over the sandy roads of other seasons in hauling logs to the banks of streams. Until the introduction of logging railroads about 1880, camps that housed crews of from forty to sixty men each were established in the autumn, were often isolated from one another and the outside world during the winter, and were abandoned in the summer (Fig. 20; pocket). Virtually all camps were set in green timber as protection against fire.

After the trees were felled, the boles were cut into given lengths. Logs from several acres were dragged by oxen or horses

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[1]Conger, op. cit., p. 10.

[2]Ashley, op. cit., p. 23. Exhaust steam turned into a small enclosure alongside the mill prevented the formation of ice.

[3]Harford, op. cit., p. 26.

to a central loading place (Fig. 25; pocket), where they were put on sleds (Fig. 21; pocket) or logging trains (Fig. 22; pocket) for movement to stream bank or railroad siding. Those taken to a bank of the Muskegon or to that of one of its tributaries were piled in such a manner that the removal of a few logs would send dozens of others into the water.

Until 1864, each lumberman arranged for the delivery of logs to his mill at Muskegon Lake. After that date, the bankside piles of logs, regardless of ownership, were turned over to the Muskegon Booming Company for delivery. During the peak years of lumbering, nine hundred men or more were employed in the driving and booming operations.

To establish ownership, logs were stamped on both ends with symbols, the dies for which were on heavy sledges. Every timber owner, contractor, and broker had a different log mark (Fig. 26; pocket). Approximately four hundred marks for the Muskegon area were registered.

Early each spring, the Booming Company sent forces of men up the streams along which logs were awaiting transportation (Fig. 23; pocket). With the first heavy thaw and its accompanying freshets, piles of logs were rolled into the streams and started on their journey to the lakeside sawmills. Any given tributary stream carried logs destined for only one mill or for a few mills, but in the main river there were masses of logs belonging to many persons and companies (Fig. 28; pocket). Several difficulties confronted the Booming Company. When jams occurred, bankside lands often were inundated, and logs left there sometimes became a source of litigation. When logs became mired in the channel, the company incurred losses. When "pirates" took logs from the water, sawed off the ends to remove identification marks, stamped on their own marks, and returned the logs to the water, the company was held responsible. A floating camp (Fig. 27; pocket) brought up the rear of each river "drive." Men assigned to this unit salvaged logs from the banks of the river.

By 1870, the Muskegon River was being utilized to capacity. Shortly thereafter, improvements were made which increased the velocity and efficiency of the current and added somewhat to the quantity of logs that the river could carry. The channel was straightened and deepened by dredging and piling. Dams were constructed on certain tributaries to maintain an adequate flow of

water in the main river for a few additional weeks. During the final decade of the lumber stage, 1878-1888, the river, even in its improved state, was utilized to capacity. The mills, unable to secure increasingly larger quantities of logs by river (Table 4), were afforded additional supplies by rail.

As soon as the first logs arrived at the head of Muskegon Lake each spring, the Booming Company sent men to the sorting grounds, where booms had been constructed (Fig. 29; pocket). All logs bearing a given ownership mark were run off into a small boom with the aid of pike poles. After several logs had accumulated there, they were chained together and pushed into a larger boom, where they were stored until a considerable number had arrived. A raft then was formed and was pulled to the mill boom (Fig. 30; pocket) by a tug. There the responsibility of the logs returned to the owner. At the height of the annual drive, logs were delivered to the mills faster than they could be sawed. Muskegon Lake then was utilized for storage. At times a third or more of its surface was covered with logs.

In the 1880's, the fringe of Muskegon Lake was an almost continuous lumberyard, where lumber was cured and stored (Fig. 32; pocket). An elderly resident of the community estimated that an average pile of drying lumber contained about 30,000 board feet (Fig. 34; pocket). If that figure is approximately correct, the lumber cut in any one of the ten peak years would have formed 20,000 piles of such size, an average of 540 piles for each of the thirty-seven mills. During those years, space near the lake front, particularly along the southeast shore, was at a premium. A few mills finally used kilns to accelerate the curing process and thereby to reduce the amount of space needed for storage yards.

With a few exceptions, mills operated only during spring, summer, and early autumn. It was necessary to utilize the river when the water was high. The first spring freshet, usually coming early in April, timed the arrival of the first logs at Muskegon Lake; low-water conditions in the river, generally becoming marked in late summer, ended effective driving. It is probable that in years when the river was lower than usual, the small supply of logs that the Booming Company could deliver curtailed the sawing season. Ice formed on Muskegon Lake late in November or early in December and continued until late in March. It prevented or

interfered with the handling of logs in the storage booms at the mills. In contrast to the general practice of seasonal operations, a few mills sawed lumber the year around. During the winter, they received logs by rail and, as already noted, made use of hot ponds.

Other factors.--The Scandinavian and Dutch elements in the population were assets to the lumbering industry. Between 1852, when the first Dutch families arrived, and 1888, the Hollanders increased to more than 5,000.[1] They came, many of them directly from The Netherlands, to establish permanent homes. Dependability and efficiency made them desirable sawmill workers. Many Norwegians, Swedes, and Finns likewise were employed in the mills, and as members of logging crews they were unexcelled.

Another cultural factor in the success of lumbering at Muskegon was the earlier experience which many of its operators had gained elsewhere. The forests of Maine, New York, and Pennsylvania had been excellent training grounds in logging and lumbering technique.

Wages in Muskegon were low.[2] In 1880, according to Census data of that year, Muskegon ranked fifth among Michigan cities in amount of wages paid, fourth in amount of capital invested in manufacturing, and third in value of manufactured products. An agreement among mill owners, scarcity of work in other occupations, and strong competition for employment in the mills kept wages for mill workers relatively low.

Lumbering benefited by political lobbying. Millmen at Muskegon, together with those at other mill centers, maintained lobbies in Washington to promote Federal expenditures on breakwaters at ports throughout the United States.[3] Between 1870 and

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[1]"Muskegon Pioneer and Historical Society," Michigan Pioneer Collections, XXI (1892) (Lansing, Michigan: Michigan Historical Commission, 1893), 685.

[2]Daily wages for loggers and unskilled mill workers ranged from $1.50 to $2.00. Skilled workers, including machinists and saw filers, drew up to $4.50. Mill workers were fortunate if sawmills operated seven and a half months a year and, until about 1877, loggers worked only during the winter. Frederick Morley, Michigan and Its Resources (Lansing, Michigan: Michigan Department of State, Commission of Immigration, 1881), pp. 140 f.

[3]John A. Russell, "Story of Michigan's Marketing," Michigan History Magazine, XIII-XIV (1929-30), 30.

1890, the Government purchased large quantities of pine piles and planks at Muskegon for harbor and shore improvements.

No insignificant portion of the annual cut of lumber at Muskegon was absorbed by the local market--a circumstance that favored lumbering there. Virtually every building in the community was of wood.[1] Many commercial buildings had wooden awnings (Figs. 35 and 36; pocket). Almost every dwelling was surrounded with a wooden fence. Thoroughfares were planked with pine and wooden sidewalks were common. Lumber went into all docks, piles, and cribwork. Indeed, Muskegon was a city of wood.[2]

Effective use was made of waste products from the mills. Edgings packed between piles of cull lumber which had been driven into the lake bottom formed serviceable docks (Figs. 37 and 38; pocket) at low cost. Waste burned under the boilers generated steam for the mills. Slabs provided domestic fuel (Fig. 31; pocket).[3] Sawdust converted tracks in soft sand into usable streets. Cull lumber was utilized as raw material for manufacturing in the later years of the lumber stage.[4] Had these various outlets not existed, the amount of wood sent directly to the refuse burners would have been much larger.

Industries Other than Logging and Lumbering

In the early years of the stage, there were few manufactural establishments in Muskegon other than sawmills. In 1888, there were forty plants of other kinds, employing approximately one-fifth of the industrial laborers of the community. Blacksmith shops became metal-working establishments, wood-working factories sprang up near sawmills, and a few miscellaneous plants utilizing neither metals nor woods began operations. All were aided in their rise by the availability of cheap fuel, raw materials, capital, ample sites, and labor, both common and skilled, and by the

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[1] In 1883, for example, there were built in Muskegon 65 business units (17 buildings), 4 factories, 4 saw and planing mills, 1 shingle mill, 1 school, 4 churches, and 350 dwellings. With four exceptions, all of these structures were of wood. Harford, op. cit., p. 20.

[2] Edward B. Dana, op. cit., p. 414.

[3] The price was $1.50 per cord delivered.

[4] Muskegon Chronicle, October 31, 1931.

demands of the local market.

Most of the wood-working and metal-working establishments were on the landward edge of the lacustrine belt surrounding Muskegon Lake. Rail connections were available there and the lakeside sites already were occupied by sawmills. Factories producing neither wood products nor metal products were scattered in the residential and commercial portions of the community. Some of them were household industries, producing such articles as cigars. Others, like the brewery, knitting mill, and flour mill, occupied lakeside locations.

The first machine shop for the repair of mill machinery was opened in 1857. Within the next five years, two combination foundries and machine shops and one edge-tool plant came into existence. Twenty years later, in 1882, there were seven iron-working establishments.[1] Five of them manufactured and repaired machinery and boilers. One specialized in the manufacture of saws (Fig. 33; pocket), and the many mills and logging crews of Muskegon provided a considerable market for its products. Another, that of the Rogers Iron Manufacturing Company, in cooperation with sawmill operators, developed new designs for log loaders, lumber pilers, lumber trimmers, refuse burners, siding machines, stationary engines, and frames for saws. This equipment increased the efficiency of the mills and thereby added to the success of lumbering at Muskegon. When lumbering was at its height, the Rogers Company employed approximately seventy men, a relatively large number for foundries of the time.[2]

Wood-working plants were opened in Muskegon about 1880. Eight years later, lumber was utilized in the manufacture of railroad cars, wagons and carriages, household furniture, pianos and piano stools, refrigerators, office and bar furniture, architectural woodwork, sashes and doors, and wooden closets. Waste products from the mills went into the manufacture of hames,

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[1]The machine shops of this stage were in reality job shops. They were small in most instances, for even those turning out engines, boilers, and machines employed comparatively few men. Such products were not stocked but were made on special order. The Semi-Centennial of the Admission of the State of Michigan into the Union, June 15, 1886, A Report Prepared by the Michigan Commission for the Semi-Centennial Celebration (Lansing, Michigan, 1886), p. 330.

[2]Ashley, op. cit., p. 18.

curtain rods, mop handles, boxes, baskets, and patented kindling wood.[1] Sales of the Temple Company (later Stewart Hartshorne) and of the Heaps Patent Earth Closet Company were national in scope. The former manufactured curtain rollers, the latter piano stools and toilet fixtures (known then as "patented wood closets").

It is noteworthy that in the last years of the stage several establishments, including three furniture factories,[2] were utilizing hardwoods. The development came somewhat as follows: Jobbers in Chicago had handled much of the output of the mills, "finishing" some of the lumber in planing mills there before sending it on to inland markets. When through freight rates were lowered about 1880, the water-haul and intermediate handling in Chicago were partially eliminated. To supply the demand for finished lumber, planing mills were built in Muskegon.[3] Shortly thereafter, manufacturing plants using the products of planing mills sprang up. To round out their activities, they needed small amounts of hardwood lumber, which mill owners obtained from patches of hardwood timber in the Muskegon Basin.

Operating in Muskegon in 1888 were certain establishments which cannot be classed as either wood-working plants or metal-working plants. They included the following:

1. A knitting mill employing about eighty persons and producing from cotton such articles as hosiery, underwear, gloves, and mittens. The industry was "parasitic," for it employed the wives and daughters of sawmill workers. Laboring conditions in the factory were above average for its kind.

2. A brewery producing 20,000 barrels of beer annually. All of the product was consumed in the community.

3. A flour and feed mill producing 170 barrels of flour daily. Wheat was brought across the lake from Milwaukee.

4. Several cigar shops, together employing about thirty men and women. Like those of other cities in Michigan, the cigar shops in Muskegon existed to supply a local market.

5. A gas company employing five men.

Interregional Factors

From 1853 to 1888, the evolution of Muskegon was the

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[1]Baker, op. cit., p. 54.

[2]Utley and Cutcheon, Michigan as a Province, Territory, and State (New York: The Publishing Society of Michigan, 1906), IV, 279.

[3]Harford, op. cit., p. 26.

result, for the most part, of favorable interregional relationships. The region supplying logs and the region demanding lumber alike helped the community to grow. Cheap transportation of both logs and lumber by water particularly favored Muskegon. With the exception of small acreages devoted to the commercial culture of fruit and celery, agricultural districts contributed little or nothing to the development of the community.

Changes in land use.--Extensive logging brought about the first change in land use near Muskegon and throughout the Muskegon River Basin. At the beginning of the lumber stage, only accessible timber was cut. Later, the cutting of logs shifted from bankside timber tracts of the lower Muskegon to those of the upper Muskegon. The cutting of wooded areas along the tributaries then followed, until even intermittent streams were utilized to carry logs. In those days, the value of any tract of timber depended largely upon its proximity to a stream. Excellent timber located at some distance from a stream possessed little value, and $1.25 per acre, the price asked by the Government, was thought high. Railroads, both standard-gauge and logging roads, made accessible much timber on interstream tracts, some in the Muskegon Basin, others just beyond it. So extensive were the tributary timberlands that Muskegon grew steadily until 1888 (Fig. 19). The interregional relationship of the vast wooded area to the community and its lumbering industry was a significant one.

From an interregional point of view, the market areas for lumber were equally as essential to Muskegon as the areas supplying logs. The chief outlet was the great wholesale yards in Chicago. Before as well as after the fire of 1871, Chicago itself used much lumber. Shipments from the yards were made to the prairie regions by rail and inland waterway (the Illinois-Michigan Canal). Late in the stage, a considerable quantity of lumber from Muskegon was moved by rail directly to its ultimate market.

The settlement of cleared areas marked the second change in land use in the Muskegon Basin. Early in the stage, most of the land was forest-covered and the farming population was small (Fig. 39). By the close of the stage, practically all of the land had been cleared and a large proportion of it had been sold to prospective farmers (Fig. 40). The State Commission of Immigration was organized to attract settlers to cleared areas in the Muskegon Basin and elsewhere in Michigan. Booklets giving

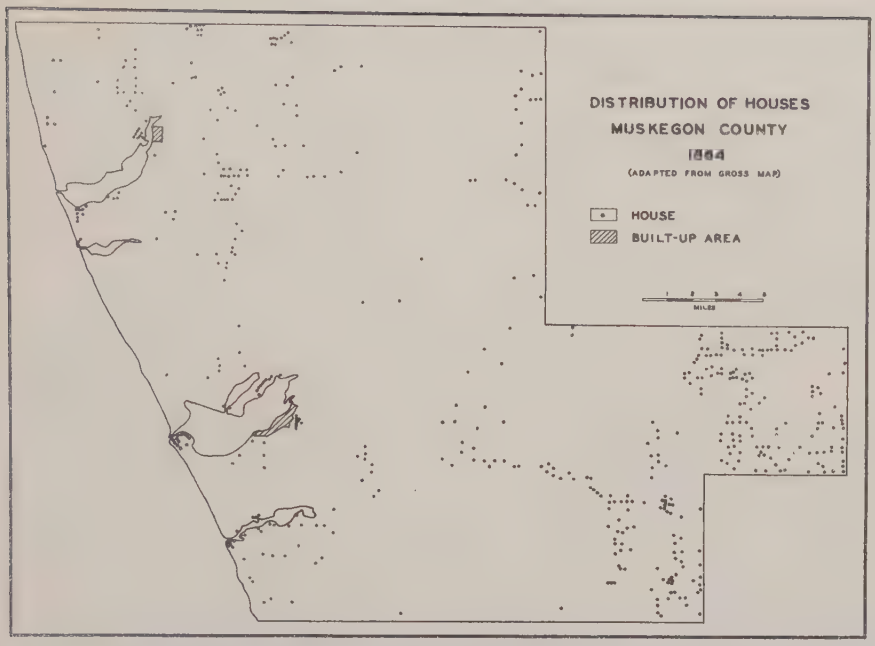

Fig. 39.--Distribution of houses, Muskegon County, 1864

promising accounts of agricultural possibilities were published and distributed widely. Most of the settlers attempted grain farming, a venture which proved to be a maladjustment. Repeated fires on the cutover areas had removed the humus content of the soil, leaving sandy wastes covered with firebush and blueberry. Moreover, the sands and sandy loams in the vicinity of Muskegon are low in moisture-retention capacity and do not possess the correct chemical elements for even moderate yields of grain.[1] The muck soils, on the other hand, are too damp. Without a cash grain crop, the farm population was little more than self-sufficient.

The third change in land use came with the abandonment of many farms. Although land companies had sold tracts for as

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[1]T. D. Sheldon, "The Agriculture and Horticulture of Muskegon and Vicinity" (Original manuscript, Hackley Library, Muskegon, Michigan, 1926), p. 3.

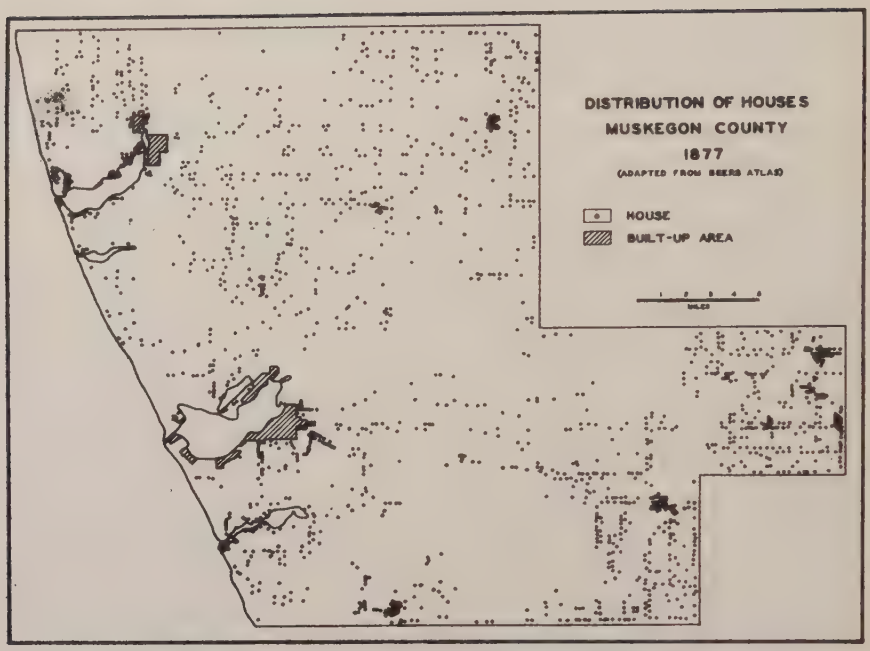

Fig. 40.--Distribution of houses, Muskegon County, 1877

little as twenty dollars per acre, purchasers soon found that the sandy soil was not worth even that price.[1] The abandonment of farms in the Muskegon Basin emphasized the fact that the pinelands were unsuited to general farming, that potentially, at least, they were better adapted to forest culture. Accordingly, large acreages in the county became idle and remained so until about 1980, when reforestation was begun.

At any given time during this stage, there were areas in which the clearing of land was proceeding, others in which settlers were taking up land, and still others in which general abandonment was under way. In the early years of the stage, so-called improved land comprised less than five per cent of the county, and at no time before 1890 did it comprise more than

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[1]Carlton P. Barnes, "Land Resource Inventory in Michigan," Economic Geography, V (January, 1929), 22.

twenty per cent (Table 5). As these figures suggest, general agriculture contributed little to the growth of Muskegon.

The fourth change in land use was marked by the development of specialized farming. The first orchard near Muskegon was planted about 1858, and it was followed by several others during the next three decades.[1] Fruit-growing doubtless was encouraged by the retardation of budding until the danger of killing frosts is past, by the presence of well-drained sandy loams, and by the success of initial orchards. During the latter part of the stage, celery-growing was developed on muck land in and around Muskegon. The requisite moisture conditions were present, and the Hollanders were familiar with the technique of working wet-land soils. Chicago provided a ready market, and daily boat service to that city ensured delivery of the product in fresh condition.[2]

Transportation by lake.--Throughout the lumber stage, transportation by lake was more important at Muskegon than that by either rail or road. Lumber was the chief commodity to be moved, and until 1872, when rail connections with Chicago were completed, Lake Michigan afforded the sole means for transporting it. To ensure prompt movement of their lumber to market, many companies purchased and themselves operated one or more boats.

Larger and larger boats were added to the Muskegon-Chicago lumber fleet. Early in the stage, sailing vessels carried about 150,000 board feet each; some years later, 300,000 board feet each.[3] A great advance in the efficiency of lumber carriers came with the introduction of the barge about 1880. At first it was towed; later, engine and boiler were installed at the rear (Fig. 41; pocket).[4] Additional capacity and increased efficiency enabled it to displace the wind-driven schooner.

To help care for the increasing passenger movement, Martin Ryerson, an early resident of Muskegon, provided larger than average quarters for travelers on his two lumber steamers. In 1867, he sold these boats to Goodrich of Chicago, who placed

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[1]In 1888, fruit valued at $125,000 was shipped from Muskegon. Baker, op. cit., p. 54.

[2]Morley, op. cit., p. 46.

[3]Daniels, op. cit., p. 8.

[4]Ibid., p. 11. The steam-driven barge was the forerunner of the modern freighter of the Great Lakes.

TABLE 5

AGRICULTURAL STATISTICS, MUSKEGON COUNTY, 1854-1935[a]

(1)	Farms (Number) (2)	All Land in Farms (Acres) (3)	Average Acreage per Farm (4)	Per Cent Area of County in Farms (5)
1854	...	.....	...	...
1860	194	24,596	127	7.6
1864	...	.....	...	...
1870	526	76,976	146	23.9
1874	839[b]	77,400	92	24.0
1880	1,283	116,804	91	36.2
1884	1,415	125,763	89	39.0
1890	1,821	139,216	76	42.9
1900	2,334	175,057	75	54.3
1910	2,373	185,010	78	57.4
1920	2,036	173,518	85	53.8
1925	1,929	155,372	81	48.2
1930	1,626	137,673	85	42.7
1935	1,964	140,154	71	43.4

[a]Sources: Columns 2, 3, 7, and 9 were compiled from the agricultural statistics in Federal and State Censuses.

[b]No report for four townships.

increasing emphasis on passenger traffic.[1] By 1883, the Goodrich Line was maintaining daily service between Muskegon and Chicago[2] with boats designed primarily for passenger and package-freight traffic.[3]

Chicago, always the chief market for the lumber of Muskegon, was logically the source of merchandise for its stores, as already noted. Low freight rates were provided in the otherwise empty boats returning to Muskegon. The movement of supplies, functioning with that of lumber and of passengers, rounded out

[1]Historic Michigan, III, op. cit., 50.

[2]The Goodrich Line maintained this service until 1932.

[3]Henry N. Walker, Michigan and Its Resources (Lansing, Michigan: Michigan Department of State, Commission of Immigration, 1883), p. 201.

TABLE 5 - Continued

(6)	Improved Land (Acres) (7)	Average Acreage Improved Land per Farm (8)	Per Cent Area of County in Improved Land (9)	Per Cent Tenancy (10)
1854	30	..	0.1	..
1860	4,709	24	1.5	..
1864	8,761	..	2.7	..
1870	16,745	32	5.2	..
1874	26,174	31	8.1	8
1880	44,604	35	13.8	8
1884	55,192	39	17.1	9
1890	72,179	40	22.4	11
1900	98,655	42	30.6	13
1910	109,656	46	34.0	13
1920	107,679	53	33.4	12
1925	76,073[c]	39	23.6	12
1930	66,011[c]	41	20.5	16
1935	57,470[c]	29	17.8	14

[c]Data available only for land in crops.

the dominant position held by lake transportation.

Transportation by river.--The increase in lumbering between 1853 and 1857 (Fig. 10) called attention to the inadequacy of the river for moving logs. In the latter year, a sum of $50,000 was expended in straightening the channel across the deltaic flat at the head of Muskegon Lake[1] and in constructing dams and dikes along the river to control the flow of water. From 1858 to 1890, it was necessary to spend several thousand dollars annually for maintenance and dredging.

Transportation by rail.--Although water transportation predominated throughout the stage, an increasing volume of freight[2] moved by rail after 1869, the year in which the first railroad[3]

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[1]Historic Michigan, III, op. cit., 46.

[2]During the nine-year period from 1873 to 1882, annual freight traffic at Muskegon rose from 187,000 tons to 875,000 tons--nearly a fivefold increase. Harford, op. cit., p. 20.

[3]The Ferrysburg and Muskegon Railroad. In 1872, this and

to Muskegon was built. Several factors accounted for the growing volume of freight traffic.

(1) Additional transportational services were needed as the population grew.

(2) After 1880, increasing numbers of logs were moved to the mills by rail as railroads pushed northward and northeastward into tracts of timber inaccessible to the Muskegon River system. This extension of rail facilities came at a time during which many mills at Muskegon were faced with exhaustion of their log supply. Logs brought by rail were rolled from the cars into the water at the foot of the "bull slide" leading to a mill and then were handled in the same manner as those delivered by water.

(3) Operators of sawmills began to utilize rail facilities to send their products to market. Until 1881, almost all of the immense output of lumber produced at Muskegon was shipped by boat to Chicago, repiled there, and in turn distributed throughout the market area. After that year, as already noted, an increasing proportion of sawmill products was sent directly to retail dealers without the intervention of jobbers and planing mills in Chicago. As a result of the new era in marketing lumber, there followed a large increase in the output of planing mills at Muskegon and a correspondingly large increase in rail shipments. In fact, during the later years of the stage, logs, lumber, and other forest products constituted four-fifths of the total rail tonnage entering and leaving the city. Baker reports that, at the height of the cutting seasons in the 1880's, upwards of three hundred carloads of lumber were shipped by rail daily.[1]

(4) Late in the stage, 1886-1887, two additional railroads were built to Muskegon.[2] Because they served new territory to

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other sections of railroad along the coast were combined into a line known as the Lake Shore Railroad. With the addition of trackage to Chicago, the line became the Chicago and West Michigan Railroad (later absorbed in the Pere Marquette Lines). Wheeler, op. cit., p. 30.

[1]Baker, op. cit., p. 54.

[2]They were the Muskegon, Grand Rapids, and Indiana Railroad (later a part of the Pennsylvania Railroad System) and the Toledo, Saginaw, and Muskegon Railroad (later a part of the Grand Trunk System). At least one of them was secured largely through the activities of the Board of Trade of Muskegon, whose members felt that the Chicago and West Michigan Railroad (Pere Marquette) was discriminatory in its rates. Ibid., pp. 30 ff.

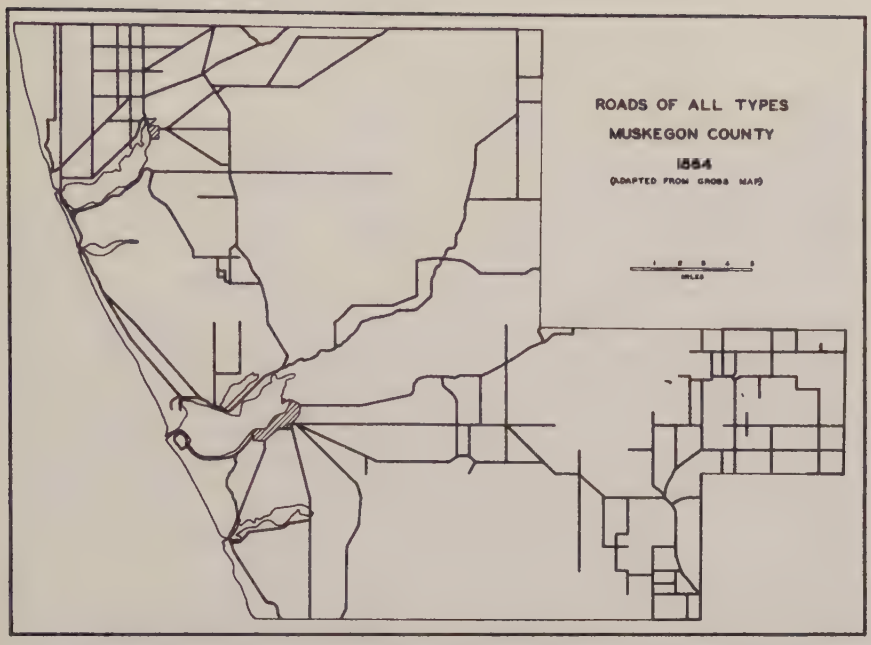

Fig. 42.--Muskegon County roads, 1864. In many cases, the Gross Map shows the surveyed rights-of-way rather than the actual roads. In reality, more roads than the map indicates contained winding stretches to avoid low swampy places.

the east and south, an increase in freight traffic ensued.

Offsetting the factors advantageous to rail traffic were a number that tended to retard its growth. (1) The impetus of an early start favored transportation by water. (2) The lakeside location of the sawmills and an established system of docks favored shipping by water more than by rail. (3) Lumber companies owning one or more boats were loath to turn to the railroads for transportation. (4) Some lumbermen were antagonistic toward the railroads in part because of a feeling that the roads were discriminatory in their rates, in part because of fear that the roads, if allowed to expand, might frequently cause fires in stands of timber.

Transportation by road.--Roads[1] were few in number and of little significance in the transportational pattern of Muskegon (Fig. 42). (1) An early dependence upon water transportation established a reliance on it which it was difficult to uproot. (2) Because of its great bulk and low value, lumber was transported by road only in negligible amounts. (3) The low-lying, sandy character of the terrain surrounding Muskegon made road construction difficult.[2] (4) Since commercial farm crops were practically nonexistent, the agricultural population made little use of the roads.

At the beginning of the stage, there was but one through wagon road, that between Grand Rapids and Muskegon (Fig. 6). Lack of a well-developed hinterland and difficulties of construction discouraged the building of other roads until 1858, when a second road was opened, this time between Ferrysburg and Muskegon. A stage line carrying mail and passengers operated over it from 1865 until 1869. Completion of the Ferrysburg and Muskegon Railroad in the latter year put an end to the operations of this stage line.[3]

The final year of boom conditions in lumbering, 1888, marked the close of this stage. Muskegon then was faced with the necessity of replacing an extractive industry with new manufacturing plants if it was to maintain a position of importance.

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[1]This term is understood to include primary and secondary routes of travel outside the community. The term "street" is reserved for all routes of travel within the limits of the community.

[2]Wesley F. Wood, "Some Sketches of Early Muskegon Life" (Original manuscript, Hackley Library, Muskegon, Michigan, 1906), p. 7.

[3]The railroad was constructed ostensibly to improve transportation across a swampy area between Grand Haven and Muskegon. Historic Michigan, III, op. cit., 44.

CHAPTER III

THE DECLINE OF LUMBERING; INDUSTRIAL READJUSTMENTS (1888-1905)

The outstanding feature of the period 1888-1905 in Muskegon was the sudden and complete decline of lumbering. The number of logs coming to the sawmills dropped off rapidly. Of the thirty-seven mills that fringed the shore of the lake in 1888 (Fig. 16), only three remained active by 1896. Most of the operators had transferred their activities to other sections of the country. The final year of the stage, 1905, was significant in two respects. It was then that the last drive of logs was sent downstream to Muskegon. It was then, too, that the community, no longer able to supply its own needs, began to receive supplies of lumber and shingles from other centers of production.

With the closing of its sawmills, Muskegon was threatened with the fate that had overtaken many other lumbering towns--a nearly complete collapse of industry and commerce. For a few years the population declined sharply, falling from 24,000 to 18,000 between 1888 and 1896 (Figs. 8 and 9). Shortly, dozens of small factories were opened and, although the mortality rate among them was high, enough survived to check the decrease in population. Thus were foundations laid for the successful diversified manufacturing of a later time.

The Changing Pattern of the Community

The transition in industry was accompanied by changes in the appearance of the community. Shipping facilities of the port fell into disuse. Many buildings that had housed mills burned or deteriorated.[1] Some residential sections declined as houses and buildings were abandoned; others remained more or less unchanged; and new sections developed. It seems paradoxical that small

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[1] E. Johnson, "Muskegon Abandons the Sawdust," Michigan Manufacturer and Financial Record, October 13, 1923, p. 2.

TABLE 6

PORT STATISTICS, MUSKEGON, 1889-1905*

(1)	Total Vessel Traffic (Tons) (2)	Lake-wise Re-ceipts (Tons) (3)	Lakewise Shipments (Tons) (4)	Receipts Logs, Lumber, and Lumber Products (Tons) (5)	Re-ceipts Coal and Coke (Tons) (6)	Receipts Unclass-ified (Tons) (7)
1889	1,043,028	120,425	922,603	74,345	...	44,796
1890	733,542	16,969	716,573	7,253	...	8,368
1891	1,199,513	76,018	1,123,495	12,649	65	61,660
1892	833,290	146,353	686,937	37,203	62	108,945
1893	1,204,531	624,709	579,823	264,232	...	356,559
1894	741,598	147,654	593,944	42,338	1,280	103,526
1895	332,409	109,680	222,729	35,928	2,975	70,777
1896	295,841	186,046	109,795	50,415	1,500	131,622
1897	524,454	245,721	278,733	62,291	1,620	179,099
1898	214,146	134,474	79,673	45,683	1,744	71,603
1899	833,963	661,969	171,994	63,157	1,350	591,143
1900	268,123	.....	.....	.....	...	.....
1901	176,368	80,119	96,249	33,485	128	43,917
1902	227,013	111,383	115,630	.....	...	.....
1903	174,353	84,601	89,752	30,695	7,853	46,053
1904	157,109	78,630	78,479	24,184	5,796	48,630
1905	238,721	167,068	71,653	22,228	1,187	143,468

*Source: Annual Reports of Chief of Engineers of the United States Army.

building booms proceeded in some parts of the community while in other parts many houses were without tenants. The situation was due largely to the rise of new industrial districts surrounded by houses for employees.

The decline or rise of various functions.--With the passing of lumbering, Muskegon ceased to be a busy port. Little use was made of its harbor facilities (Table 6). After the closing of the mills, the lumber docks began to decay and soon much of the shore of Muskegon Lake presented a desolate scene of abandonment and ruin. Only two wharves remained in usable condition; they were maintained and utilized by steamship companies. Operators of new factories placed little value on water-front locations. Most of the plants were too small to utilize cargoes of a size that could be carried cheaply by lake vessel. Docks and

TABLE 6 - Continued

(8)	Receipts Metals and Scrap (Tons) (9)	Receipts Cotton and Hides (Tons) (10)	Shipments Sand (Tons) (11)	Shipments Lumber (Tons) (12)	Shipments Furniture (Tons) (13)	Shipments Miscellaneous (Tons) (14)
1889	1,284	...	...	919,006	...	3,589
1890	1,348	...	405	714,344	45	1,789
1891	1,877	...	8,878	897,698	1,510	215,409
1892	8	135	70,610	549,274	1,927	65,126
1893	418	3,600	13,647	235,080	1,257	330,843
1894	500	...	6,880	493,745	...	93,384
1895	...	...	3,159	109,560	...	110,010
1896	2,309	200	5,516	69,759	...	32,009
1897	2,495	216	991	172,322	...	45,420
1898	114	525	26,989	17,395	...	49,212
1899	6,146	103	30,763	78,323	...	62,908
1900	...	...	...	.....	...	.....
1901	3,518	71	2,996	53,805	74	39,362
1902	...	...	...	.....	...	.....
1903	...	...	5,145	40,331	...	44,271
1904	10	...	3,567	22,753	...	52,159
1905	185	...	1,206	34,681	...	35,766

extensive storage yards were therefore of little use.[1] Moreover, as carriers of manufactured articles, boats could serve only a restricted territory.

The only development in port facilities during this stage came in 1897 with the establishment of car-ferry service between Muskegon and Milwaukee. A car-ferry slip was constructed on the southern side of the channel leading from Muskegon Lake to Lake Michigan. Winter ice presented less of a problem there than at the head of Muskegon Lake. Daily service was sufficient to maintain an open path through it. After nine years, the Pere Marquette Railroad, which had sponsored the ferry, moved the eastern terminal from Muskegon to Grand Haven.

Many houses near the closed sawmills in the districts of

[1] U. S. Congress, House of Representatives, Water Terminal and Transfer Facilities, H. R. 226, 63rd Cong., 1st Sess. (Washington: Government Printing Office, 1913), pp. 1048 f.

Port Sherman, Bluffton, Lakeside, Picket-Town, and North Muskegon became vacant as mill workers moved elsewhere. Little or no effort was made to keep such property in repair, and much of it reverted to the state for nonpayment of taxes.[1] Only renters of very small means or stranded owners remained to occupy houses in these more or less blighted areas.

Since the sites, buildings, and storage grounds of the sawmills were ill-suited to the needs of the new manufacturing plants that were locating in the community, and since these plants desired rail service, new factory districts were established, vacant land along railroads on the outskirts of the community being selected for the purpose. Especially important was a new industrial district at Muskegon Heights (Fig. 43). Other districts of somewhat less significance developed in Lakeside and in the southeastern corner of Muskegon city.

Political boundaries and community boundaries underwent changes. The new suburb of Muskegon Heights expanded the limits of the community, producing a bulge in the band-like form that had existed earlier. The city of Muskegon annexed Port Sherman, Bluffton, and Lakeside in 1889, and Pinchtown six years later (Fig. 3).[2] The political union of this attenuated urban area doubtless would have met more opposition than it did had not the street railway system electrified and extended its lines at about the same time.[3]

Changes in commercial functions and in their localization came with the closing of the sawmills. Company-owned stores, situated near the mills, no longer dominated the commercial field. On Western Avenue, many structures which formerly had been occupied by saloons and restaurants became vacant. In time the buildings were replaced or were adapted to use by new retail establishments. This area was destined to be the nucleus of the

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[1] L. G. Matthews, "The Civic Development of Muskegon" (Original manuscript, Hackley Library, Muskegon, Michigan, 1926), p. 7.

[2] In 1893, a tract of 110 acres north of the channel of the Muskegon River was annexed by the city when there was talk of a belt line railroad and when it seemed to the advantage of the city to control both sides of the river channel. To date, the area has not been used for residences.

[3] Historic Michigan, III, op. cit., 45.

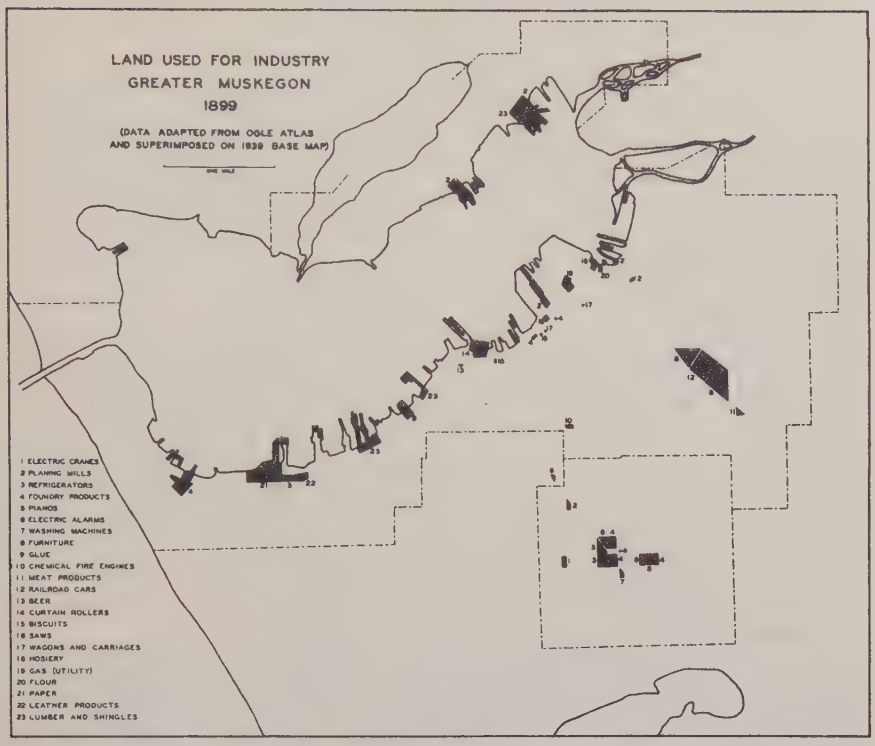

Fig. 43.--Land used for industry, Greater Muskegon, 1899

most important commercial district of the community. Outlying commercial districts developed in Lakeside and Muskegon Heights.

Municipal inactivity accompanied the decline of lumbering. Public improvements were neglected. The old wooden sidewalks decayed. Few repairs were made on existing pavements, and little new pavement was laid down. More miles of streets were surfaced in 1905 than in all the preceding years of the stage--an evidence of civic rejuvenation.

In contrast to the foregoing evidences of stagnation or decadence were certain civic improvements of a cultural nature. The city received from lumbermen several civic features which could be matched by few other cities in Michigan at that time. Among the gifts were a park, a library, an art gallery, a manual training school, and a modern hospital--each endowed with a fund

for operating expenses.[1] These gifts, together with other substantial benefactions, had a value in excess of five million dollars.

Muskegon Heights, a new industrial district.--Muskegon Heights, a suburb slightly more than two miles south of the old sawmill district on Muskegon Lake, was the scene of the chief residential and industrial development of this stage (Figs. 3, 43, and 44). In reality, the development resulted from a real-estate boom induced by astute advertising despite the supply of houses left vacant by the decreasing population.

The project originated with several Muskegon men, who later formed the Muskegon Improvement Company.[2] Shortly before 1890, they secured title to about one thousand acres just beyond the southern limits of the city. The tract was sparsely populated and well suited to suburban development. Part of the land sloped gently toward Muskegon Lake on the north, part toward Mona Lake on the south. In general, it was covered with second-growth timber. The inducements offered to new industries were free sites along the Pere Marquette Railroad, low tax rates, and cheap lots on which their employees might build houses.

The land of the Improvement Company was subdivided, ten acres being reserved for parks and 110 acres for factory sites. In May, 1890, a sale was held and 2,800 lots were disposed of at $130 each.[3] Drawings were made after the sale, and not until then did a purchaser discover the location of the lot he had bought. To encourage sales, the company had built houses on certain lots, which were drawn with the others at the established price. A portion of the proceeds from the sale was to be used to pave some of the streets and to make other improvements.[4]

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[1]Addie Littlefield, "Historical Sketches of Muskegon Schools" (Original manuscript, Hackley Library, Muskegon, Michigan, 1920), p. 6.

[2]Greater Muskegon Chamber of Commerce, Muskegon, North Muskegon, and Muskegon Heights, A Report Published by the Greater Muskegon Chamber of Commerce (Muskegon, Michigan, 1924).

[3]Edward B. Dana, "Muskegon in the Nineties" (Original manuscript, Hackley Library, Muskegon, Michigan, 1924), p. 4.

[4]The purchase price was not due until all lots were sold and factories were under construction.

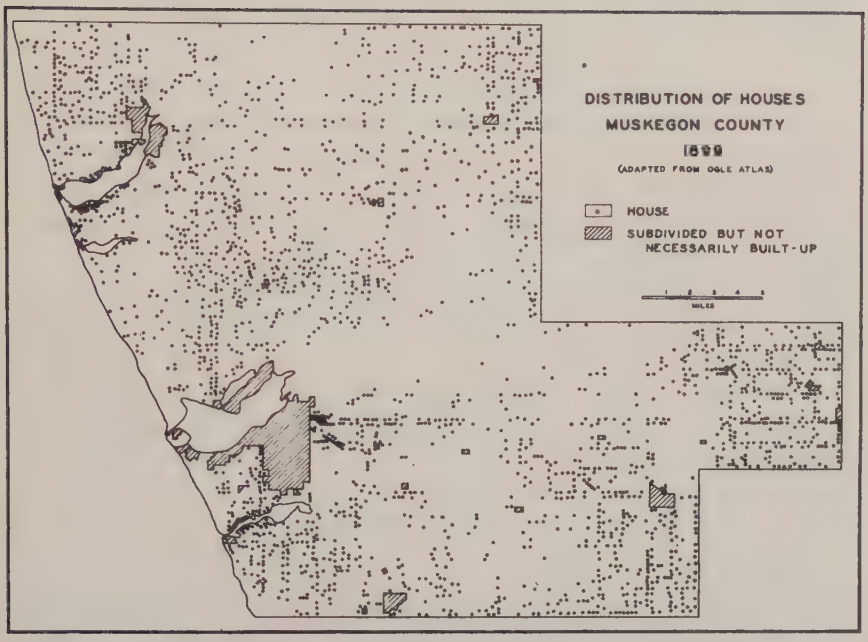

Fig. 44.--Distribution of houses, Muskegon County, 1899

That the promoters were somewhat dubious of the success of their venture is indicated by the fact that they "hedged" on the drawing of lots by selling seven hundred choice sites to a Toledo syndicate. So profitable was the sale, however, that another was held sixteen months later, September, 1891. Again, a number of houses were built to serve as "bait," and two thousand lots were sold at $165 each.[1]

The growth of Muskegon Heights was rapid. A year after the first sale of lots, there were 300 persons in the settlement and two years after, 1,300 persons. More than four hundred houses had been built during the two years, and the monthly payroll of the factories had risen to $20,000. By 1903, the population had grown to such an extent that the Heights was incorporated as a city. Many of the industrial plants attracted to the

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[1]A total of $694,000, therefore, was paid for the 4,800 lots.

Greater Muskegon community located there. Of the seven factories that began operations there in 1890, three developed into important manufacturing concerns which still are operating.[1]

Factors in the Evolution of New Industries

Industries were attracted to the community by bonuses, by the concerted efforts of leading citizens, and by advantages of site and situation.[2] Despite the fact that nine-tenths (35) of the sawmills and almost three-fourths (144) of the other manufacturing establishments ceased operations during this stage (1888-1905), the successful factories kept Muskegon an industrial city and employed many of the men who remained there after the closing of the sawmills.

Since local historians have noted most of the successful manufacturing ventures and few of the failures, and since no quantitative figures are available, it is difficult to trace many of the new industries. It has seemed necessary to resort to a rather qualitative scheme (Table 7),[3] namely, the use of material in Muskegon City Directories. Two hundred one manufacturing plants are referred to in the directories as in operation at some time between 1888 and 1905. Only fifty-seven of them were in operation in the latter year. It is probable that most of the remaining 144 failed, that a few merged with other factories in Muskegon, and that a few moved elsewhere.

Industrial products in this stage were of various kinds. Even so, the general types were similar to those manufactured today--evidence that a number of the industries of the present had

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[1]Norge Division of Borg-Warner Corporation (formerly Alaska Refrigerator Company), Shaw Walker Crane Company, and Morton Manufacturing Company.

[2]Headlight Flashes along the Grand Trunk Railway System, Muskegon, Michigan, op. cit., p. 4.

[3]Directories of the community have been published in alternate years since 1873. The names of manufacturing establishments were selected from the lists of classified businesses. The date of beginning and the years in operation thus were secured for each factory. This method is questionable in two respects: (1) the accuracy of the compiler of the directory is uncertain and (2) there is a possibility that some factories began and ceased operations between the publication of one volume and the compilation of the next. Thus the number of failures may have been larger than the figures here indicate.

their beginnings during the years 1888-1905. Refrigerators, machinery, castings, electric cranes, iron-working machinery (such as lathes), knit goods, washing machines, shade rollers, furniture, and woodwork were the most important products manufactured in those years. Others included hames, kegs, saws, bolts, and nails. With the exception of the last five, all have been manufactured more or less constantly since then.

TABLE 7

SUMMARY OF MANUFACTURING, MUSKEGON, 1888-1905[a]

Number of plants[b] in operation in 1888	38[c]	
Number of plants in operation in 1888 which ceased operations by 1905	29	
Number of plants in operation throughout the stage, 1888-1905		9
Number of plants opened, 1888-1905	163	
Number of plants opened, 1888-1905 which ceased operations before 1905	115	
Number of plants in operation in 1905		48
Total number of plants engaged in manufacturing in 1905		57
Total number of plants ceasing operations, 1888-1905	144	
Total number of different plants in operation, 1888-1905	201	
Percentage of plants ceasing operations during the stage		72%

[a]Source: Muskegon City Directories.

[b]Throughout the summary, the term "plants" is considered to mean manufacturing plants exclusive of sawmills.

[c]Twenty of these were household establishments manufacturing such products as cigars, brooms, harness, carriages, and wagons.

Bonus funds.--The Muskegon Chamber of Commerce was reorganized in 1889 to help attract new industries. It is questionable whether the Chamber alone could have secured many new plants, but the bonus funds put at its disposal did much to promote manufacturing in the community.[1] Small, struggling companies which

[1]Headlight Flashes along the Grand Trunk Railway System, Muskegon, Michigan, op. cit., p. 4.

were beset with labor troubles or financial troubles in large cities were attentive to offers of bonuses from Muskegon. The industries which thus were enabled to gain a foothold in the community were well diversified. Some of them showed remarkable growth and were responsible to large extent for the maintenance of the industrial life of Muskegon. Some of the larger factories there today came as small plants and were helped by bonuses to survive.[1] Their success seems to have justified the use of civic funds as a means of industrial rejuvenation.

The first fund available to industries was the so-called McGraft Park Fund[2] of $100,000. Beneficial results from its use were apparent as early as 1895. A similar sum, named the Wharf Fund,[3] was raised a few years later. It was used not alone to supply bonuses, but also to make loans to companies needing help. The usual method of determining the amount of bonus to be paid a new company in Muskegon was to allow $100 for each person whom the company expected to employ. The sum was advanced in exchange for a mortgage, usually on the factory plant. If, during the first seven years of operation, the average number of employees equaled or exceeded the estimated number, the mortgage was cancelled. In the event of failure to maintain the average employment anticipated, the company was asked to return a proportionate amount of the bonus. When a company did not succeed, the Chamber of Commerce as administrator of the fund took over the plant and in time sold it to a newcomer. Failures could be accounted for

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[1]They are: Central Paper Company, Amazon Knitting Mill, Shaw-Walker (filing devices), E. H. Stafford Company (laboratory equipment), Campbell-Wyant-Cannon (castings), Brunswick-Balke-Collender (bowling, billiard, and bar equipment), and Continental Motors Corporation.

[2]Since levying taxes for the benefit of an individual or a company was illegal, a subterfuge was employed whereby in 1893 Newcomb McGraft deeded McGraft Park to the city. He provided that the voters should authorize the city administration to bond the city for $100,000 and turn over the proceeds of the bond sale to the bonus fund. In reality, city funds were to be used to attract industries. Since that time, the tract has been maintained as a park.

[3]This fund was raised by a plan of bonding almost identical to that of the McGraft Park Fund. In this case, a sum was voted, supposedly for a public wharf located where a part of the Continental Motors Corporation plant stands. In reality, the sum was voted to swell the bonus fund.

in most instances by one or more of the following: poor management, difficulty in obtaining raw materials, inability to market products, lack of required skill in the labor supply, inability to secure adequate capital.

Labor, capital, and transportation.--Diversified manufacturing was also stimulated in large measure by the efficient labor supply, the available capital, and the good transportational facilities in Muskegon.

Although many loggers and sawmill workers left the community for other timbered areas, several thousand Hollanders[1] and Scandinavians preferred to remain and to change the nature of their work.[2] They comprised a desirable group from which the operators of new factories could choose employees. They were conscientious, they possessed temperaments adapted to factory work, and they were thrifty. Most of them owned their homes. But for the presence of this efficient type of laborer, the change to diversified manufacturing undoubtedly would have been more difficult.

Several lumber operators who remained in Muskegon following the termination of lumbering used part of their capital to help attract industries to the community and to give them a start. In a few instances, they purchased struggling manufacturing plants in other cities and moved them to Muskegon. In 1890, two Muskegon lumbermen, Moon and Hume, purchased the Alaska Refrigerator Company of Michigan City, Indiana and moved it to Muskegon Heights, where it has become the Norge Corporation. In the same year, Hackley, another lumberman, secured a controlling interest in the reorganized Chase Brothers Piano Company of Grand Rapids and moved it to Muskegon. The Nelson Piano Company and the Muskegon Washing Machine Company were other Grand Rapids industries which were moved to Muskegon.[3]

Transportational services equal to or better than those in other West Michigan ports of the time tended to attract industries to Muskegon. Passenger and package-freight boats plied

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[1]In 1891, there were 6,000 Hollanders or their descendants living in Muskegon.

[2]Carpenter, op. cit., p. 7.

[3]The Advantages and Surroundings of Muskegon, Michigan (Muskegon, Michigan: Muskegon Board of Trade, 1892), p. 39.

daily between Chicago and Muskegon on a ten to twelve-hour schedule. In addition to enjoying good rail connections with the East and South, Muskegon profited for a time (1897-1906) by connections with the West and Northwest via car ferry to Milwaukee.

TABLE 8

AVERAGE DAILY WAGES
MICHIGAN CITIES, 1905*

Battle Creek	$2.05
Lansing	1.93
Port Huron	1.88
Kalamazoo	1.85
Jackson	1.85
Detroit	1.84
Bay City	1.82
Grand Rapids	1.77
Saginaw	1.66
Muskegon	1.58

*Source: Annual Report of the Michigan Department of Labor for 1905.

Other helpful factors.--Although bonus funds, labor supply, capital, and transportational facilities were of prime importance in attracting industries, several other factors helped to attract new plants during the transitional time from 1888 to 1905. (1) Some industries came to Muskegon chiefly because of the presence there of plants fabricating parts that they could use. Factories producing machinery, for instance, located near foundries; several furniture factories were to be found near sawmills and planing mills. (2) Two knitting mills took advantage of a supply of female labor easily recruited from among the daughters and wives of men whose wages were relatively low (Table 8) and whose tenure of employment was somewhat uncertain. (3) The success of some of the older metal-working establishments in Muskegon influenced others of their kind to spring up there between 1888 and 1905. (4) Agreeable living conditions may have been a factor in attracting certain plants. To factory officials and skilled employees, Muskegon had much to offer. There were many houses for rent or purchase. Residential spacing was relatively open, and most streets were well shaded. Lakes and wooded areas[1] nearby afforded recreational facilities. For a city of

[1]In second-growth timber.

its size, cultural conditions in Muskegon were excellent.

Unfavorable factors.--In contrast to factors favoring the transition from lumbering to diversified manufacturing, as noted in preceding paragraphs, there were several factors which tended to make the transition difficult.[1] (1) The decline of lumbering was sudden.[2] (2) A fire in 1891 caused severe losses in the residential and commercial areas. (3) The Panic of 1893 brought heavy business losses and many failures. (4) The bonus funds did not yield results until after 1895. (5) The shrinkage in population during earlier years of the stage was chiefly among the younger men, some of whom had held administrative positions and others of whom had been skilled laborers. With their exodus, the community lost some of its better citizens.

Trends in Transportation

Shortly after 1888, railroads became the dominant feature in the transportational pattern and life of Muskegon, a situation brought about largely by the shift from water front to rail side in the location of most factories. Three railroads[3] served Muskegon at that time--the Chicago and West Michigan; the Muskegon, Grand Rapids, and Indiana; and the Toledo, Saginaw, and Muskegon. The last two were constructed late in the preceding stage (1886). All three extended service tracks into unused areas on the outskirts of the community, notably in Muskegon Heights and Lakeside areas, where industrial districts were developing. In 1902, an electric interurban line joined Muskegon, Grand Rapids, and Grand Haven, achieving principally a reduction in passenger fares by rail between those cities.

Good transportation to Milwaukee and the Northwest was made available to Muskegon for a time by the car-ferry service. The effect on the community was slight, however, for most of the freight cars involved were enroute from eastern points to western points and Muskegon was little more than a station on a railroad

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[1] Edward B. Dana, "Muskegon in the Nineties" (Original manuscript, Hackley Library, Muskegon, Michigan, 1924), p. 4.

[2] The output of the mills in 1895 was but one-fifteenth of the output in 1888.

[3] Walter S. Syrett, Report upon the Proposed Muskegon Railway and Navigation Company (Muskegon, Michigan, May, 1918), p. 4.

line, the ferry serving as a bridge across Lake Michigan.

Of the lake fleet of earlier days there remained to Muskegon only boats affording daily service for package-freight and passengers moving to and from Chicago. Even coal for industrial and domestic uses arrived by rail.

Roads continued to be relatively unimportant. In 1892, traffic between Muskegon and Grand Rapids via Ravenna warranted at last the application of gravel to the road which had connected these points for forty-six years. A few years later, as a result of increasing traffic, the Muskegon-Spring Lake-Grand Haven road, also long used, was surfaced with macadam.[1] With the exception of these two roads, country highways in the vicinity of Muskegon were still little more than tracks in the sand.

Changing Status of Interregional Factors

During this transitional time, the relationships between Muskegon and other regions underwent changes. (1) The mining of white pine timber was completed during the stage and by 1905 the region that had supplied logs to Muskegon mills was a cutover land of little value agriculturally, as a source of raw materials, or as a market for industrial products.

(2) No longer was Chicago the outlet for most of the industrial output of Muskegon, for diversification had widened the market. Muskegon merchants, however, continued to purchase most of their stocks through jobbers and wholesalers in Chicago.

(3) Furniture woods came by rail from the forests of Michigan, Wisconsin, and Minnesota; pig iron was furnished by blast furnaces of the Chicago area; and partly fabricated products came from many sources, Grand Rapids, Chicago, and Detroit being the three more important ones.

(4) There was an increase in subsistence farming near Muskegon between 1890 and 1900, during which time the number of farms in Muskegon County increased twenty-eight per cent (Table 5), an indication that many employees formerly engaged in logging and lumbering had turned to agriculture (cf. Figs. 40 and 44). Later, new industries absorbed many of these temporary farmers. The disadvantages of sterile soil in most places continued to

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[1] Perhaps the absence of gravel nearby prompted the use of macadam.

make general farming an unprofitable occupation. The number of fruit farms and celery farms remained fairly constant. Without a moderately large cash income, the farm population of the tributary area contributed little, as in the preceding stage, to the commercial life of Muskegon.

With the shift from lumbering to diversified manufacturing completed, Muskegon was prepared for the second great rise of industry in its history.

CHAPTER IV

THE RISE OF DIVERSIFIED MANUFACTURING (1905-1939)

Muskegon in this latest stage of its evolution has been preeminently a manufacturing community, ranking sixth among the cities of the United States in per capita output of factories. The greater part of the residential area bears evidence of occupance by factory workers. The growth in industry and in the industrial population has been attended by a correlative development in the commercial function. Activities in the hinterland--agriculture and resorting--remain poorly developed. There appear to be few cities of similar size that are so largely dependent upon industry for their well-being.

Three important "booms" have marked the later industrial development of Muskegon. The first came during the World War, the second during the late 1920's, and the third in 1937. The first two resulted in growth of population (Fig. 8); the last illustrated the recuperative powers of such an industrial center.

Changing Pattern of the Community

The new deep-water port.--At least eight improvements in harbor and port facilities have strengthened the position of Muskegon as a lake port, and the land-locked harbor and extensive water front are again important factors in the economic life of the community. The first improvement involved deepening the entrance and constructing a modern arrowhead breakwater. It has helped to make Muskegon Lake one of the better harbors on the Great Lakes. With the completion of this improvement in 1932, more than $2,500,000 had been expended by the Federal Government at Muskegon for building concrete revetments and stone breakwaters and for dredging. In most years, some dredging in the channel entrance is necessary to maintain the requisite depth, although the amount is minimized by Muskegon Lake, which acts as a settling basin for alluvial material carried to it by the river.

The second improvement was the erection of the Mart, a modern port terminal built by the West Michigan Dock and Market Corporation in response to the later-day need for warehouse and bulk-breaking facilities and for a storage plant for apples, other fruits, and vegetables (Table 9, columns 11, 14-17, 19-21, and 24). The Mart also provides wharf space for eight vessels and an auditorium and sports arena. The harbor improvements constructed by the Government would have been of little benefit to the community had port facilities at the Mart not been completed. About $750,000 of private capital, together with a loan of $654,000 from the Reconstruction Finance Corporation, went into this essential enterprise.

After twenty-seven years, during which car ferries operated between Grand Haven and Milwaukee, Muskegon again (in 1933) became the eastern terminus and thereby increased its prestige as a port. A new car-ferry slip (Fig. 50; pocket) was constructed on the southern shore of Muskegon Lake about two miles from the harbor entrance.

Muskegon possesses several advantages, of considerable importance when taken together, over Grand Haven as a car-ferry port. Muskegon is three miles nearer Milwaukee than is Grand Haven. Boats are able to navigate the harbor at Muskegon more easily, for it is the wider of the two. The harbor entrance at Muskegon is closed with ice less frequently than is that at Grand Haven. Ice blown by northwest winds accumulates in the concave arc of the shore line at Grand Haven more often than along the shore line at Muskegon, which trends northwest-southeast.[1] Some winters elapse without the loss of a single scheduled sailing from Muskegon.

Four additional improvements to facilities on the lake front at Muskegon relate to the unloading of bulky materials from boats. Means have been provided for handling pulpwood, petroleum products, coal, and cement (Table 9, columns 12, 13, and 22). Large proportions of the petroleum products and cement are used in other communities in the western part of the Lower Peninsula. The wood is utilized by the Central Paper Company (Fig. 51; pocket), and the coal by industries and residents of Muskegon.

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[1]The configuration of the shore at Ludington makes that port an even better winter one than Muskegon.

TABLE 9

PORT STATISTICS, MUSKEGON, 1906-1937*

(1)	Total Vessel Traffic (Tons) (2)	Lakewise Receipts (Tons) (3)	Lakewise Shipments (Tons) (4)	Imports and Exports (Tons) (5)
1906	136,340	83,890	52,450	.....
1907	120,194	63,681	36,513	.....
1908	115,269	87,701	27,568	.....
1909	115,746	88,100	27,646	.....
1910	103,762	89,459	14,303	.....
1911	114,015	94,114	19,901	.....
1912	91,659	78,055	13,604	.....
1913	110,773	83,978	26,795	.....
1914	119,811	93,507	26,304	.....
1915	115,035	94,615	20,420	.....
1916	127,496	103,330	24,160	.....
1917	78,092	55,228	22,864	.....
1918	114,374	92,727	21,647	.....
1919	146,833	111,937	34,896	.....
1920	174,500	129,800	29,100	15,600
1921	309,938	266,563	24,608	18,767
1922	382,733	308,716	38,069	35,948
1923	424,736	354,397	40,924	29,415
1924	356,986	309,268	29,423	18,295
1925	389,132	323,794	33,484	31,854
1926	339,796	262,181	29,551	47,950
1927	432,268	356,596	30,101	45,458
1928	639,028	425,251	152,671	61,067
1929	972,149	485,462	443,986	42,655
1930	669,427	497,177	134,293	37,876
1931	676,831	576,365	93,685	6,730
1932	598,914	284,830	313,415	.....
1933	513,215	425,737	86,847	560
1934	609,153	472,430	119,999	2,805
1935	766,276	592,147	134,833	29,829
1936	1,138,183	711,509	386,714	38,449
1937	1,245,872	690,447	474,941	79,391

*Source: Annual Reports of Chief of Engineers of the United States Army.

Finally, facilities for the loading of foundry sand (Table 9, column 23) have been provided on the lake shore near Pigeon Hill, a sand dune south of the harbor entrance. The equipment is adequate to load boats within a few hours.

All of the port improvements, with the exception of those at the Central Paper Company wharves, have been made within the last twelve years. Considerable impetus has been given to

TABLE 9 - Continued

(6)	Total Vessel Traffic (Value) (7)	Lakewise Receipts (Value) (8)	Lakewise Shipments (Value) (9)	Imports and Exports (Value) (10)
1906	.....	.....	.....	.....
1907	.....	.....	.....	.....
1908	$13,522,000	.....	.....	.....
1909	6,580,759	.....	.....	.....
1910	4,714,883	$ 2,234,952	$ 2,479,931	.....
1911	6,639,136	2,825,251	3,513,885	.....
1912	4,691,252	2,352,912	2,338,304	.....
1913	7,819,964	2,471,748	5,348,216	.....
1914	8,154,536	2,656,236	5,498,303	.....
1915	8,244,279	2,985,446	5,258,883	.....
1916	10,247,808	4,028,884	6,218,924	.....
1917	6,987,309	3,213,031	3,774,278	.....
1918	9,108,562	4,946,271	4,162,291	.....
1919	23,028,784	12,192,215	10,836,569	.....
1920	20,680,900	12,044,800	8,559,700	$ 76,400
1921	18,762,000	12,691,100	5,922,600	148,300
1922	41,967,900	19,179,150	22,605,750	183,000
1923	39,565,830	23,441,660	15,947,670	176,500
1924	27,204,100	15,545,380	11,556,270	102,450
1925	26,930,550	15,252,800	11,511,750	166,000
1926	25,455,450	14,274,250	10,911,850	235,350
1927	27,703,600	14,482,640	12,951,100	248,100
1928	28,744,700	16,172,000	12,214,650	339,300
1929	34,535,300	20,712,400	13,529,300	272,900
1930	20,427,900	11,903,900	8,311,750	185,600
1931	15,295,200	9,065,600	6,191,300	27,600
1932	12,921,700	7,753,550	5,157,300	.....
1933	13,116,600	9,816,200	3,273,150	15,950
1934	23,712,800	11,929,790	11,228,500	101,900
1935	42,112,450	20,580,060	20,337,700	831,800
1936	43,474,500	20,646,450	21,713,130	1,001,550
1937	46,138,350	20,168,120	24,569,800	1,108,650

shipping by these developments.

Residential districts.--At the beginning of the stage, 1905, Muskegon city, Muskegon Heights, and North Muskegon each contained unused land. Most of it, with the exception of dune and swamp areas, was built up before 1920. After that date, urbanization spread over the political boundaries, particularly near important highways that enter the city (Figs. 47 and 48).

Two of the three major changes which have taken place in the corporate boundaries of Muskegon city were made during this

TABLE 9 - Continued

	Receipts					Shipments	
(11)	Metals and Scrap (Tons) (12)	Lumber and Lumber Products (Tons) (13)	Petroleum, Coal, and Their Products (Tons) (14)	Cotton and Hides (Tons) (15)	Unclassified (Tons) (16)	Shade Rollers (Tons) (17)	Refrigerators (Tons) (18)
1906	...	40,910	1,835	...	42,145	...	...
1907	100	30,685	2,230	...	30,666	...	...
1908	...	31,002	...	...	56,698	...	...
1909	...	...	...	...	...	...	...
1910	...	23,803	...	...	65,656	1,219	370
1911	...	27,005	...	...	67,115	1,008	375
1912	...	30,231	...	238	47,586	1,007	372
1913	...	44,598	...	550	38,746	1,115	370
1914	...	42,056	...	600	51,754	...	444
1915	...	29,058	9	550	64,893	...	444
1916	...	42,966	8	600	59,552	...	50
1917	...	6,401	11	600	48,144	...	59
1918	...	32,044	13,407	600	50,056	...	200
1919	...	25,132	31,510	630	54,623	...	...
1920	...	15,800	48,300	600	64,990	...	119
1921	...	39,610	143,214	600	83,046	1,500	279
1922	150	60,084	169,650	550	78,199	2,125	...
1923	...	20,812	234,820	600	98,465	1,500	...
1924	...	26,404	172,109	750	109,929	1,250	135
1925	...	87,408	138,994	800	96,386	1,000	137
1926	170	30,635	152,209	786	78,363	875	146
1927	130	18,560	177,685	454	159,767	750	138
1928	14,389	42,567	188,655	762	178,878	700	...
1929	76,724	5,641	209,049	673	193,375	600	...
1930	20,087	9,537	238,312	275	228,966	425	...
1931	13,850	13,445	307,698	529	240,844	275	...
1932	2,458	...	249,881	...	32,491	175	...
1933	26,195	...	323,804	...	75,738	60	...
1934	17,646	...	358,195	...	96,607	...	423
1935	32,483	98	410,919	...	148,647	...	458
1936	69,588	...	492,953	...	149,337	...	1,209
1937	48,650	...	538,881	...	102,916	...	922

stage.[1] In both cases, the additions were utilized principally for residential purposes. In 1917, the strip of unused land between Muskegon city and Muskegon Heights was added to the former.[2]

[1]In 1889, at the height of lumbering, the villages of Lakeside, Bluffton, Port Sherman, and Pinchtown were annexed, but little nonurban land was added thereby.

[2]Lowell B. Dana, op. cit., p. 15.

TABLE 9 - Continued

	Shipments					
(19)	Machinery and Automotive Parts (Tons) (20)	Billiard Tables, Bowling Alleys (Tons) (21)	Furniture and Office Equipment (Tons) (22)	Crude Oil (Tons) (23)	Sand (Tons) (24)	Unclassified (Tons) (25)
1906	...	...	...	.....	6,445	46,905
1907	...	...	...	.....	.....	36,903
1908	...	...	...	.....	1,109	26,459
1909	...	...	...	.....	.....	.....
1910	105	...	...	.....	.....	12,991
1911	50	...	...	.....	.....	18,468
1912	15	4,000	...	.....	.....	8,210
1913	15	4,100	1,400	.....	.....	19,795
1914	97	4,100	2,263	.....	.....	19,400
1915	173	6,100	2,580	.....	.....	11,113
1916	948	9,970	3,014	.....	.....	10,183
1917	909	7,883	215	.....	.....	13,798
1918	1,907	2,113	1,568	.....	.....	15,859
1919	1,250	...	1,609	.....	.....	32,037
1920	3,480	4,000	1,368	.....	.....	20,133
1921	1,988	9,232	1,034	.....	.....	10,575
1922	9,101	7,515	1,090	.....	.....	18,238
1923	13,842	12,361	2,795	.....	.....	10,425
1924	4,633	4,740	1,952	.....	.....	16,713
1925	4,392	6,235	3,155	.....	.....	18,565
1926	5,375	6,749	3,192	.....	.....	13,214
1927	5,652	6,481	3,587	.....	.....	13,493
1928	6,097	5,247	3,727	.....	125,591	11,309
1929	3,012	3,975	3,259	230,516	193,004	19,620
1930	3,740	1,107	2,867	57,147	56,750	12,257
1931	6,172	1,925	2,633	22,060	52,196	8,424
1932	3,636	858	1,376	6,740	286,391	14,239
1933	2,939	326	375	15,220	59,527	8,400
1934	17,527	390	79	6,477	75,863	19,240
1935	36,555	...	...	.....	66,698	31,122
1936	37,302	...	...	.....	308,760	39,443
1937	41,363	...	...	.....	393,393	39,263

The district was subdivided and it developed quickly. During the decade 1920-1930, East Muskegon developed sufficiently to be added to Muskegon city in 1930. The residents of additional built-up areas contiguous to the city now are asking for annexation. No important changes have been made in the political boundaries of Muskegon Heights and North Muskegon since their incorporation. Attempts to annex them to Muskegon city have been

unsuccessful.

Periods of building activity in Muskegon have coincided with those of marked industrial activity. In the boom years of 1916-1919, nearly two thousand houses were constructed, most of them cheap structures, in Lakeside, Muskegon Heights, and the southern part of Muskegon city.[1] In the boom period of the late 1920's, approximately eight hundred houses of similar quality were built in East Muskegon. The addition of hundreds of low-quality houses has not enhanced the appearance of certain residential districts. Inasmuch as Greater Muskegon is preeminently industrial, the districts in which factory workers live comprise a large proportion of the total residential area. Only in Glenside (Fig. 3) and in North Muskegon are there districts that contain, for the most part, homes of professional people and "white-collar" workers.

Eight residential districts in the community have been recognized.

(1) The central district (original city area).--Many of the better homes of the community are in this district. Built at the peak of lumber production, they occupy, for the most part, relatively large lots and are still well-kept. There can be little expansion here, for the district contains few vacant lots.

(2) Lakeside district.--This district contains, in general, the homes of skilled factory workers. It affords little opportunity for further residential expansion, for considerable building was done there between 1916 and 1919, and the northern edge adjoins the Lakeside factory district.

(3) Bluffton-Port Sherman district.--Nearly all of the many poorly constructed homes built here during lumbering days have been razed or rebuilt during the past thirty years. Today, the houses are of two types, those occupied by skilled workers in the factories of Muskegon and those occupied only during the summer by non-residents. The presence of shifting dunes and the utilization of nearly all sites available for homes preclude the possibility of much expansion, unless summer homes are built on divided lots. From 1890 to 1910, this district, then known as Lake Michigan Park, was the recreational center of the community.

(4) Glenside district.--A real-estate boom here in 1936 resulted in the sale of many lots, and it is likely that this newly developed district may expand rapidly in the near future. Second-growth timber and gently rolling land help to make it desirable for better-class residences. A portion of the area deserves annexation to Muskegon city.

(5) Muskegon Heights district.--Although there are many

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[1] Muskegon Chamber of Commerce, Annual Report, 1919.

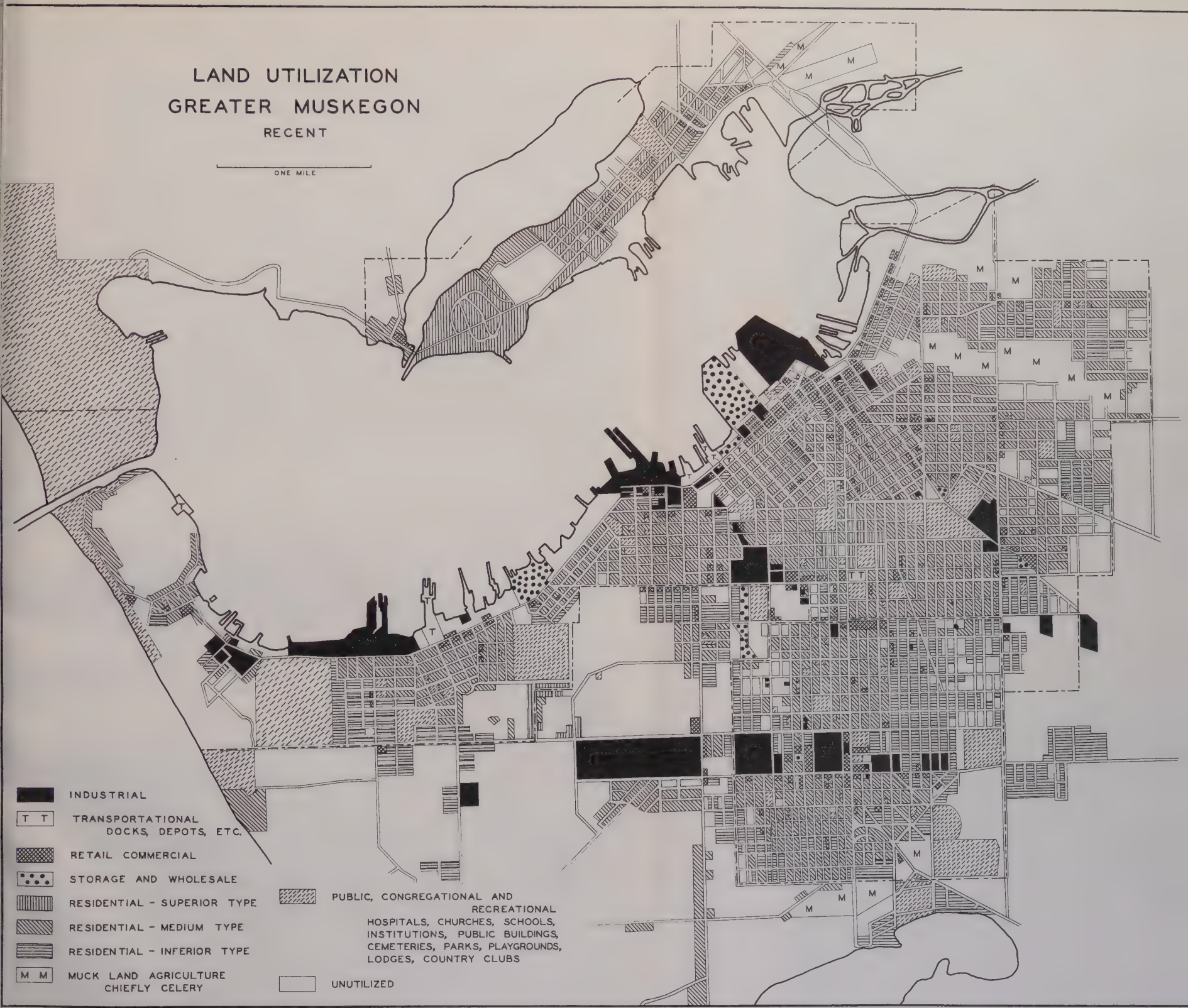
LAND UTILIZATION
GREATER MUSKEGON
RECENT
ONE MILE
INDUSTRIAL
TRANSPORTATIONAL
DOCKS, DEPOTS, ETC.
RETAIL COMMERCIAL
STORAGE AND WHOLESALE
RESIDENTIAL - SUPERIOR TYPE
RESIDENTIAL - MEDIUM TYPE
RESIDENTIAL - INFERIOR TYPE
MUCK LAND AGRICULTURE
CHIEFLY CELERY
PUBLIC, CONGREGATIONAL AND
RECREATIONAL
HOSPITALS, CHURCHES, SCHOOLS,
INSTITUTIONS, PUBLIC BUILDINGS,
CEMETERIES, PARKS, PLAYGROUNDS,
LODGES, COUNTRY CLUBS
UNUTILIZED

FIGURE 47

blocks of medium-class residences, this district is made up largely of homes of unskilled factory workers. Even though the entire area is subdivided, there are many city blocks having only a few houses each. So quickly was the Heights settled that, before water and sewer services could be provided, the residents had learned to do without them. Many of the houses are still without city water and modern plumbing.

(6) East Muskegon district.--Since 1920, this district has developed from one containing a few scattered farm homes to one having residences for nearly 8,000 persons. Annexation came in 1930, when the population was 6,002.[1] During the decade 1920-1930, more houses were built here than in all other parts of the community combined. The Castenholz Brothers managed a series of subdivisions in the district, sold lots, erected houses to be offered for sale, and often financed the building of houses on lots which they had sold.[2] Although there was a lull in building activity here from 1930 to 1936, the district again is leading the community in the number of houses under construction. A combination of unsegregated low-class and lower middle-class residences which house factory workers predominates (Fig. 45; pocket).

(7) North Muskegon district.--Here the houses of lumbering days have given way to middle-class and upper-class residences. That portion of the district lying on a narrow isthmus between Muskegon Lake and Bear Lake[3] contains many of the larger and better homes of the community. Although many of them have extensive grounds, there is still considerable vacant land on which houses can be constructed.

(8) Highway district.--Extending for several miles along each of the main highways entering the community are homes and "farmlettes" (Figs. 48 and 49). The majority of the houses were built in the late 1920's or early 1930's and, in general, they are small and rather cheaply constructed. Most of them are occupied by factory workers. The tracts vary in size from one to five acres and in most cases they were acquired because of a desire for land ownership or a need for partial self-sufficiency. The highways give easy access to the factories in Muskegon.

Commercial districts.--Few of the changes that have occurred in the central business district (Fig. 55; pocket) have resulted in shifts in boundaries. Old buildings have been remodeled or replaced with structures better adapted to new methods of sales and display. An increase in such commercial forms as used-car lots, fruit markets, and filling stations has caused some spread along Western Avenue at the eastern and western ends of the district (Fig. 47).

The rise of neighborhood shopping districts is a development of the past two decades. Throughout the stage of diversified

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[1] Muskegon Chronicle, November 22, 1930. [2] Ibid.

[3] This part of North Muskegon is known as Interlaken.

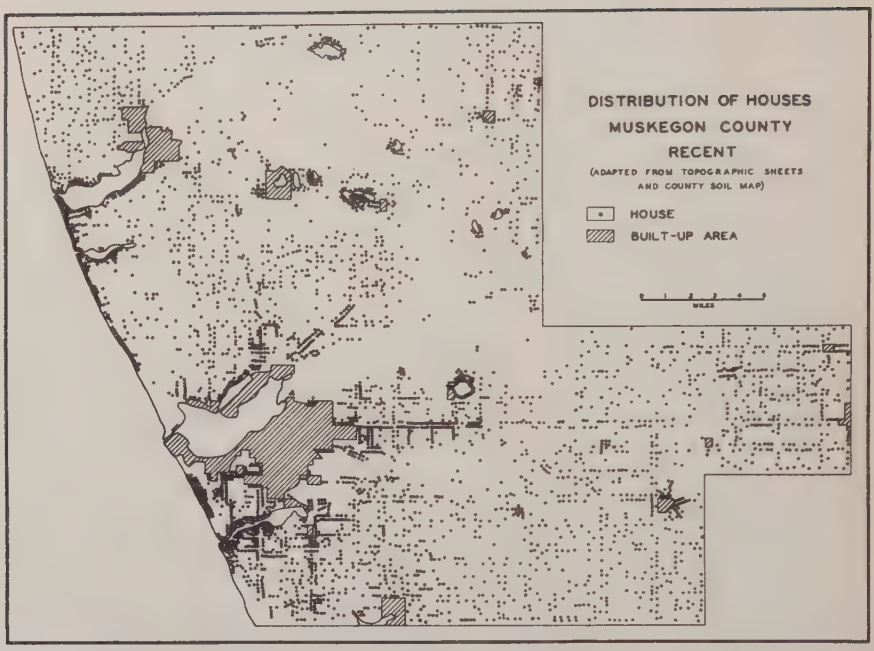

Fig. 49.--Distribution of houses, Muskegon County, recent

manufacturing, small grocery stores have dotted the community, but today their services have been replaced to a considerable extent by those of eight secondary commercial districts, most of which occupy locations along well-traveled streets. The secondary commercial district in Muskegon Heights is the largest in size as well as in variety of shops and services represented.

In the evolution of the community, other functions rank high along with the port, residential, and commercial functions considered in this section. Because of the detail needed in discussing them, the industrial, transportational, and mineral (petroleum) functions have been placed in the individual sections which follow. There are yet other functions, such as congregational and public, which are not considered because of the minor part which they have played in the evolution of Muskegon in this stage.

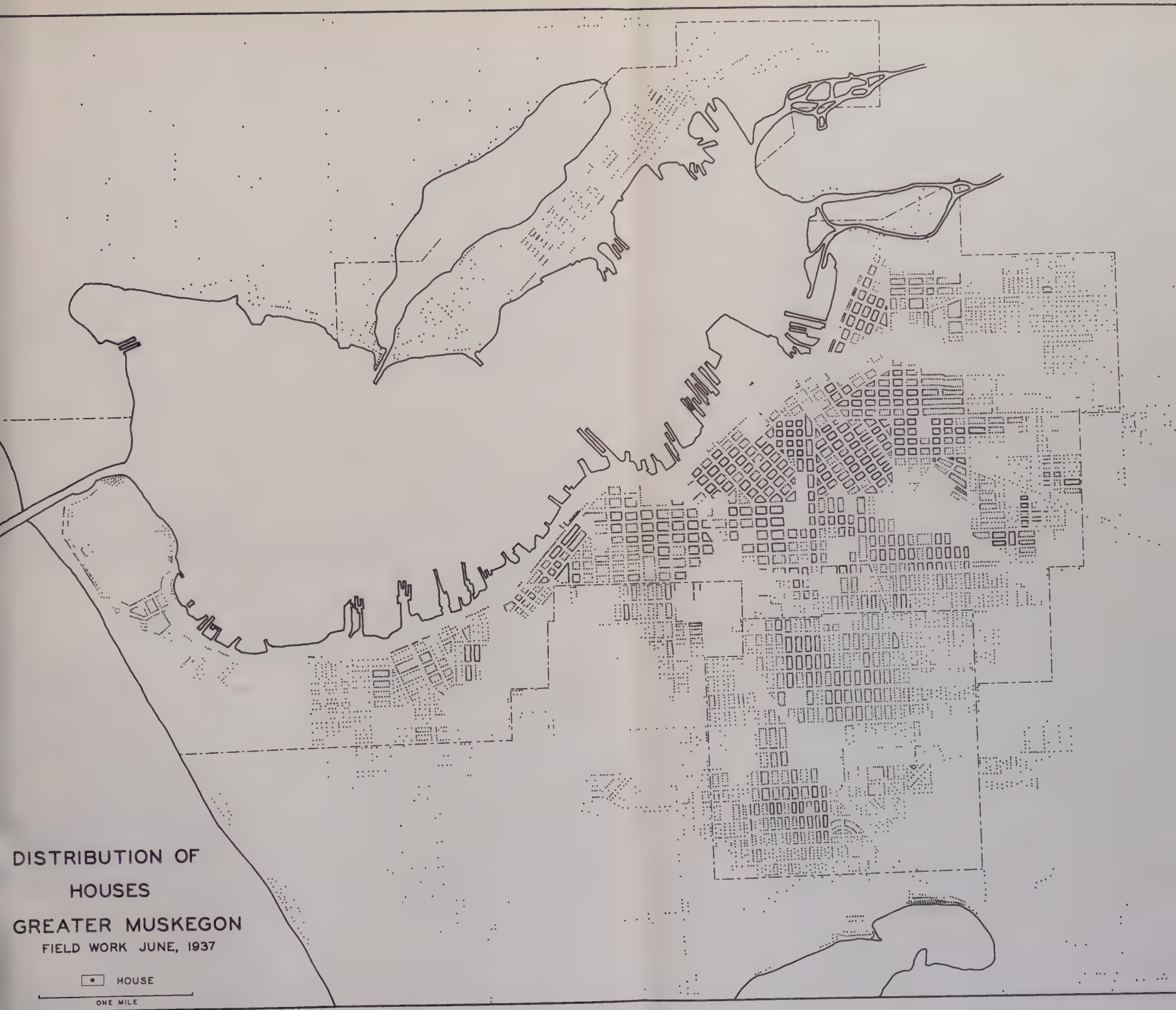
DISTRIBUTION OF
HOUSES
GREATER MUSKEGON
FIELD WORK JUNE, 1937
HOUSE
ONE MILE

FIGURE 48

Evolution of Certain Types of Industries

The rise of diversified manufacturing coincided with the growth of certain small plants into large ones. Chiefly because of the impetus of early starts received in lumbering days, metal-working and wood-working plants have predominated in this stage, metal-working plants ranking first. Although automotive and foundry products lead, the community produces a wide variety of manufactures, not alone in the metal-working group but in other groups as well. Because of the sharp downward and upward trends in employment, a table prepared one month to show employment by classes of industry would differ somewhat from one prepared a few months earlier or later. In spite of the fact that employment has passed 18,000 twice within the last ten years, the figures in the table of employees by industries (Table 10) probably represent conditions somewhat above normal.

TABLE 10

EMPLOYEES BY TYPES OF INDUSTRIES*

Classification	Number of Employees
Foundries	4,800
Factories producing automotive parts	4,200
Wood-working factories	3,200
Factories producing miscellaneous metal products	2,300
Wire mill	600
Knitting mill	500
Paper mill	460
Factories producing machine tools	210
Pattern-making factories	130
Miscellaneous factories	350
Total	16,750

*Data for October, 1936.

Foundries.--Foundries in Muskegon originated in plants which supplied sawmills with machines, boilers, saws, and other mill equipment. The success of the early foundries drew others, and with the rise of the local automotive industry, still others began operations. Today, there are three large foundries and several smaller ones in the community. The Campbell, Wyant, and Cannon Foundry employs approximately 2,000 persons and is said to be the largest gray iron foundry in the country. Started in a

small building in 1908, with the three partners comprising the working force, it expanded rapidly. The firm was led into the motor castings field when it accepted a contract from the Continental Motors Corporation. Today, it supplies several leading automobile manufacturers with part or all of their engine blocks.

Scrap, pig iron, molding sand, and coal--the four chief raw materials required by foundries--are brought in by truck, rail, and water. Trucks, as carriers of iron and steel scrap from southwestern Michigan and of foundry sand from a dune near Muskegon, are valued for their ability to move freely to many parts of the plants. Scrap iron from Chicago and Detroit, coal from Pennsylvania and West Virginia, and pig iron from the Chicago area arrive by rail. At present, the larger foundries could well utilize water-front locations. In fact, even though none of them possesses wharf facilities, some coal and pig iron have been received by boat during the last two years. Rail facilities are used almost exclusively for sending castings to assembly plants near Detroit and in the Midwest, for the use of rail is less expensive than that of trucks for large quantities of heavy, bulky products. Transportation by lake is impracticable without water-side locations.

Automotive factories.--The production of automotive materials gives employment to approximately one-fourth of the workers of the community. At least fifteen factories are engaged in the manufacture of one or more of the following: gasoline motors, piston rings, pistons, camshafts, tappet guides, valves, springs, bus bodies, and other automotive products. Until recent years, Continental Motors was a leader in its field of motor production (Continental Red Seal Motors). Muskegon piston ring factories, of which that of the Sealed Power Corporation is most important, produce more than half of the piston rings used annually by the automotive industry of the country. So important is the automotive industry in Muskegon that practically every automobile manufactured in the United States has one or more parts produced there.[1]

Much of the industrial growth of the city can be traced to the rise of the Continental Motors Corporation and related factories. The corporation began the manufacture of automobile

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[1]Chamber of Commerce, Muskegon Progress, XI (1930), 2.

engines in 1904 in a small vacant store building near Cottage Grove Avenue and Sixty-Third Street, Chicago. A bonus brought the company to Muskegon in 1906. For two decades it expanded rapidly, employing 7,000 in 1924. After suffering losses when it attempted to enter the automobile field, the company was reorganized and again is manufacturing gasoline engines for farm and tractor use. At the present time, there is talk of the company's producing motors for planes on a Government contract.

Wood-working factories.--The manufacture of articles from wood in Muskegon was begun when local raw materials were plentiful and when there was a supply of laborers trained by sawmill experience in handling wood. The persistence of wood-working factories to the present is worthy of note. For purposes of tracing the evolution of this type of manufacturing through the stage, the developments of five of the eleven factories are treated briefly.

(1) Brunswick-Balke-Collender.--This company came to Muskegon as a small concern in 1904 and has since grown to leadership in the production of billiard and pool tables, bowling alleys, and billiard, pool, and bowling supplies. Today it supplies eighty per cent of the requirements of the country for these products. In number of employees, it ranks fourth in the community, having a permanent force of approximately 1,000 and a peak force of nearly twice that number. At times it has manufactured phonographs, bar equipment, and automobile tires.

(2) Stewart Hartshorn.--In 1879, this plant began the manufacture of the wooden parts of curtain rollers from waste products of the sawmills. It has continued the production of this specialty to the present and has added the manufacture of metal types. The company, national in the scope of its sales, employs an average of 350 persons.

(3) Shaw-Walker Company.--The two founders of this company came to Muskegon in 1899 to manufacture small wooden trays and to print cards to be placed in them. From this beginning has grown the nationally-known plant which manufactures filing devices. With a staff of 750 employees, it produces files, indexes, and furniture for offices. Although its early products were chiefly of wood, both metal and wood now are utilized as raw materials.

(4) E. H. Sheldon Manufacturing Company.--This company moved to Muskegon in 1912 to begin the manufacture of laboratory

equipment for schools and industrial plants. Its customers have included many large universities and industrial research laboratories. Most of the output is built on special order. The plant furnishes employment for approximately 250 persons.

(5) Borg-Warner Corporation (Norge Division).--This company, the largest in Muskegon, employs more than 3,000 persons. Its products are refrigerators, beverage coolers, mangles, and stoves. It began operations in Muskegon Heights in 1891 as one of the first companies secured for that suburb by the Muskegon Improvement Company. In its early days, it used wood almost exclusively in the manufacture of refrigerators. Known then as the "Alaska Refrigerator Company," it has been a consistent leader in the field of refrigerator production. In addition to producing the famous Norge line, the plant manufactures refrigerator cabinets for a prominent mail-order house.

Factories producing miscellaneous metal products.--The metal-working plants of preceding stages trained employees who have helped establish the seventeen factories in this group. Some of the companies are nationally known and many of them have been in operation in the community from twenty to forty years. The products are of such divergent types as excavating machinery, pumps, steel furniture, sanding machines, vacuum cleaners, brass and aluminum castings, plumbing supplies, electric cranes, elevating chains and buckets, shop trucks, sprinkler systems, boilers, and puttyless steel sashes. The aggregate employment of 2,300 persons suggests the value of this group to the community.

Minor classes of industrial plants.--The production of copper wire in Muskegon is related to the automotive-parts industry there. The principal product of the Anaconda Wire and Cable Company, the only wire mill in the community, is enameled magnet wire for use in making electrical equipment for automobiles. Although some copper from Michigan is used, much of that required is brought from Montana and Utah by rail to Milwaukee and thence by boat to the Mart.

The Amazon Knitting Company has maintained an important factory in the community for more than fifty years. It was successful in early days because of the large demand in western Michigan for knitted cotton products such as mittens, stockings, socks, and underwear. Today, chain stores selling variety goods are the outlets for most of the products of this mill. Bales of

cotton come from the South by rail, or by water via Chicago. Two special factors have favored this mill: the relatively high humidity desirable in handling cotton is present, and women operatives are available. The company has employed women almost exclusively throughout its history.

The Central Paper Company, brought to Muskegon by a bonus of $10,000, was the first manufacturing plant to locate on the site of an abandoned sawmill. The choice of a lake front site was judicious, since water, rail, and highway facilities are available there for the receipt of wood billets, the raw material (Fig. 51; pocket), and for the shipment of kraft and gift-wrapping papers, the principal products. Muskegon Lake not only provides the large quantity of water used in the process of paper-making but also serves to dilute the odorous mill wastes dumped into it.

Companies have developed in Muskegon to supply the needs of the many metal-working establishments there for special machine tools necessary to the working of iron and steel. Included in the group is the Morton Manufacturing Company, which produces heavy-duty tools such as lathes and drills used in the manufacture of large shafts, axles, and guns.

The development of an extensive foundry industry in the community has given rise to several pattern-making establishments. Molding sand placed around the wood and metal patterns furnishes the shape of the required casting.

Finally, there is a group of factories whose products do not fit into the general classification given in Table 10. The successful operation of most of them is attributable in large part to their markets, either local or in western Michigan. The products of factories which have more than a local market include leather goods, casein products, petroleum products, and flour. Printing products, monuments, ice, bread, candy, and soft drinks are manufactures produced almost entirely for local use or consumption.

The last sawmills.--The last logs were run down the Muskegon River in 1905, as already noted. During the next ten years, two mills operated spasmodically on logs salvaged from the lake and the river. At the time of large lumber production, the loss of logs from sinking had been considered a natural one. Logs were cheap then, and no time could be spared in recovering them. In the early years of this stage, however, the price of

lumber had risen sufficiently to make the salvaging of logs a profitable enterprise.

Factors Advantageous to Manufacturing

Manufacturing in Muskegon has been favored in various ways, some of which have been noted earlier. A few of the factors considered in the following paragraphs have had special significance, and occasionally one or another of them has been determinative in bringing an industry to the community. Various helpful factors that are found in many other cities, no less than in Muskegon, and most or all of which already have been noted in particular connections, will not be given further consideration. They are suitable sites, favorable tax rates, an adequate and suitable water supply, available homes for employees, the presence of factories producing parts for further fabrication or demanding such parts, and the variety of skills accompanying diversification of industry. The port facilities and rail and highway connections are treated elsewhere in this chapter.

Labor supply and laboring conditions.--Several manufacturers have listed efficiency of labor as a prime factor among those which influenced them to locate their plants in Muskegon. In the first place, the laboring group is more or less familiar with mass-production methods as a result of training acquired in the sawmills and in the early factories of the community. In the second place, it was the experience of local employers during the preceding two stages in the evolution of the community that Scandinavian and Dutch laborers are superior to Slavs, Hungarians, Poles, and Italians as artisans in the industries involved (Table 11). Fortunately, perhaps, the latter groups always have been small in Muskegon, the largest influx coming between 1910 and 1920, when there was a rapid increase in manufacturing. In general, they were unskilled workers. Finally, the community has some advantage over large cities in that most of its factory employees live relatively near the plants.

The turnover in labor at Muskegon is low, a fact explained partly by the temperament of the laborers, most of whom represent northwest European stocks. Helping also to account for the fact, perhaps, is the belief of many workers that the employers' association maintains files of discharged and undesirable employees and that dismissal from the factory of any employer in the

association makes it difficult or impossible for a worker to obtain employment elsewhere in the city.[1]

Open-shop conditions have prevailed. Before 1937, two or three unions were company-inspired for advertising purposes. In 1937 and 1938, several companies, operating with union labor in other cities, were compelled or induced to unionize their plants in Muskegon. Two factors have helped to maintain open-shop conditions. One is the employers' association, which continuously has frowned upon unions. The other is the reluctance of the Dutch and Scandinavian workmen to affiliate with binding associations.[2] An important by-product of the open shop in Muskegon has been a minimum of strikes, none of significance having occurred since lumbering days. As long as such a situation is maintained, the community possesses a special advantage as a location for factories.

TABLE 11

FOREIGN-BORN PERSONS AND PERSONS OF FOREIGN PARENTAGE
MUSKEGON CITY AND MUSKEGON HEIGHTS, 1930

	Per Cent Foreign-Born		Per Cent Foreign-Born and of Foreign Parentage	
	Muskegon	Muskegon Heights	Muskegon	Muskegon Heights
Northwestern Europe	9.1	4.7	24.9	14.6
Southern and eastern Europe	1.4	7.6	4.3	10.3
All other countries*	1.9	1.3	5.4	5.1

*The Canadian element predominates in this group.

Diversification of industry tends in normal times to minimize the unemployment and wage problems that hamper some one-

[1] No evidence of the existence of such files was secured.

[2] The presence of many similar yet separate church groups is pointed to as an evidence of this attitude. There are several varieties of Lutheran and of Dutch Reform churches.

industry communities, for the time of peak demand for labor in one factory often coincides with the slack demand in another.

Bonuses and loans.--In Muskegon the post-war depression period, 1919-1925, had much in common with the post-lumbering period, 1890-1900. During both, unemployment was high and various companies failed. During both, the community found it necessary to raise funds to salvage industries and to attract new enterprises. To these ends, the Greater Muskegon Industrial Foundation was organized in March, 1925. As a civic finance corporation, it administers the interest on a fund of $450,000 which was raised by subscription in 1925 and 1926, using it (1) to make mortgage-secured loans to needy companies in the community, (2) to give bonuses to attract industries, and (3) to make loans to industries wishing to build or expand in Muskegon.[1]

Cheap electric power.--Manufacturing was given considerable impetus immediately after 1906, when power from a hydro-electric plant[2] on the Muskegon River near Croton reached the community. Factories requiring cheap electric power were attracted to Muskegon, several coming during the years 1906-1910.[3]

City-manager government.--The adoption of the city-manager form of municipal administration seems to have resulted in a saving for the taxpayers of Muskegon city and Muskegon Heights, chief of whom are the owners of industrial plants. During the first years of the stage, civic improvements in the city were made slowly. Municipal policies were almost lacking, and few long-term plans were carried through or even formulated. The expenses of the city government mounted year by year without the adoption of adequate measures to meet them. Taxes were anticipated and spent far in advance, with resultant financial difficulties.[4] Finally, a group of progressive citizens created

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[1]Greater Muskegon Chamber of Commerce, Monthly Bulletin, Vol. I (July, 1927).

[2]Houghton Lake, the source of the Muskegon River, lies 589 feet above Lake Michigan. Four hundred feet of the drop between the two lakes occurs between Big Rapids and Muskegon. Along this relatively steep gradient there have been constructed two dams, at which hydro-electric power is produced cheaply.

[3]Borg-Warner (Norge Division); Campbell, Wyant, and Cannon; Continental Motors Corporation.

[4]Matthews, op. cit., p. 9.

sufficient public support to bring about abolition of the aldermanic form of government in 1919 and replacement of it with the commission-manager plan.[1] The Heights made a similar change a few years later.

Weather conditions.--The weather at Muskegon is generally favorable to industry. Location on the eastern shore of Lake Michigan results in a relatively small annual range of temperature. The average southern line of "deep snows" lies about fifty miles north of Muskegon. Factories there seldom are faced with increased costs due to delays from heavy snowfall in the receipt of raw materials and in the shipment of products. Although factories in cities having climates less favorable than that of Muskegon may be air-conditioned, the time probably is remote when many factory workers will live in air-conditioned homes. Workers in Muskegon profit by the favorable climate there.

Oil, a Temporary Resource

The boom.--In this latest stage, as in the lumbering stage, Muskegon developed an extractive industry. A discovery oil well, located three miles northeast of Muskegon, was brought in on December 8, 1927 and produced gas at the rate of nearly 500,000 cubic feet per day. Later in the month, the well was deepened and an initial production of 300 barrels of oil per day was secured.

Inasmuch as this was the first gas and oil field of significant size in Michigan, activity there was soon at high pitch. In less than twelve months, thirty operators were drilling wells, pumping oil, and shipping their output by tanker or refining it locally. Since town-lot subdivisions permitted a close spacing of wells (Fig. 52), the field was extensively over-drilled. In 1928, another and more prolific oil horizon was discovered in deeper beds. Additional operators were attracted, and by August, 1929, the field had reached its peak production of 18,570 barrels daily.

The decline.--The producing area, approximately 2,800 acres, was relatively small, and there were no great gushers in it. The maximum daily production from any one well approximated

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[1] Muskegon was among the first cities in Michigan to adopt this form of government.

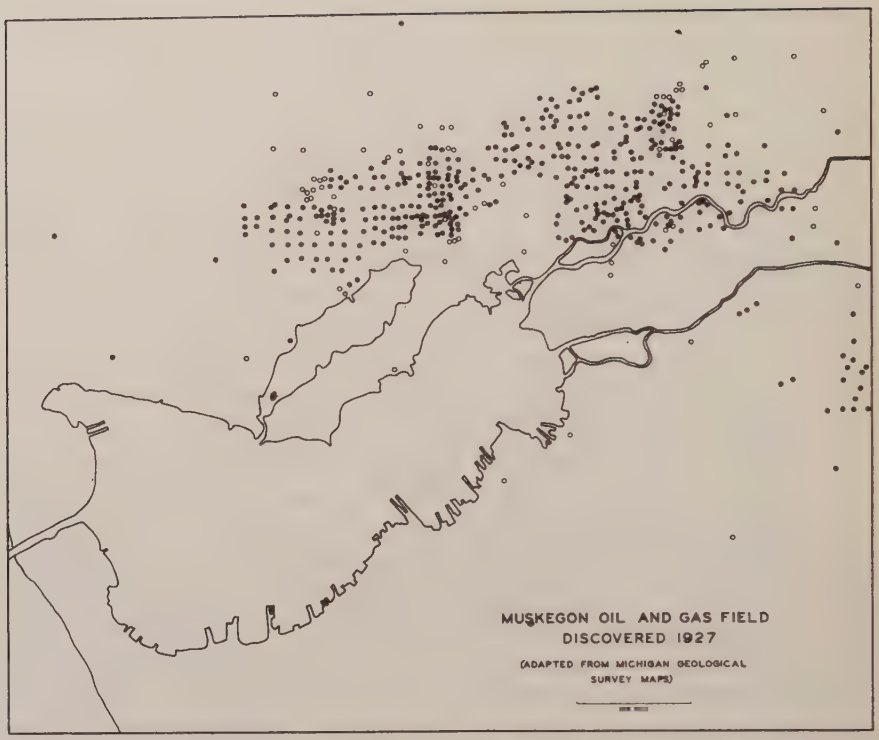

Fig. 52.--Wells in the oil and gas field near Muskegon. The solid circles represent wells that at some time have yielded gas or oil. The open circles represent dry wells and wells abandoned before completion.

3,000 barrels, and the largest flow of gas from any one well was 25,000,000 cubic feet daily. By July, 1936, the daily production for the entire field had dropped to 243 barrels, and in December, 1938, to 75 barrels--an indication of approaching exhaustion.

Again the harbor at Muskegon was used to ship out a natural resource, and again the available supply of the resource dwindled quickly after a peak production (Fig. 53). Today, only a few dozen men find employment in pumping, handling, and refining oil. Unlike the decline of lumbering, however, the decline of oil production was not a major event in the life of the community.

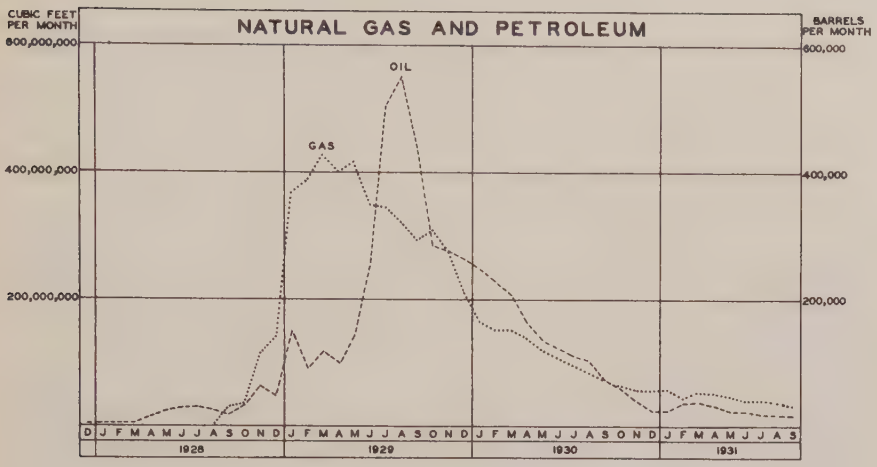

Fig. 53.--Oil and gas production, Muskegon field

Geology of the field.--The surface of the oil field is relatively flat. Deposits of sand laid down in the edge of Glacial Lake Chicago mask the glacial till, which is approximately two hundred feet thick. Drilling alone, therefore, furnished information concerning subsurface structural conditions, for no bedrock is exposed in the county. Drilling for oil near Muskegon was not, however, a wildcat scheme, for as early as 1903, Lane, a geologist, pointed out that an anticline containing oil and gas might exist on the north shore of Muskegon Lake.[1] The discovery twenty-four years later proved that he was correct.[2]

Effects on the community.--The discovery and exploitation

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[1]The domed structure in which oil was found extends around the northeastern corner of Muskegon Lake in an arcuate fashion (Fig. 52) and has a length of approximately six miles. Oil and gas were produced from three levels: the upper Traverse (1,650 feet), the lower Traverse (1,850 feet), and the Dundee (2,050 feet). R. B. Newcombe, "Geology of the Muskegon Oil Field," Bulletin of the American Association of Petroleum Geologists, XVI (February, 1932), 153 ff.

[2]Lane based his theory on the logs of deep wells which had been sunk in or near Muskegon, most of them before 1875. As in the case of the salt-producing areas of Saginaw and Manistee, early drilling operations were fostered largely by the lumbering industry.

of the oil field near Muskegon brought about results of moment to the community.

(1) Royalties, leases, and wages resulted in the expenditure of much money locally; and the installation of pumps, pipe lines, tanks, and refineries meant the investment of large amounts of capital. It has been estimated that these expenditures and investments exceeded $3,000,000.

(2) Oil production brought four refineries, only two of which remain in 1939.[1] Both bring in crude oil by tank car, pipe line, and truck from other oil fields in Michigan. They provide employment for about sixty persons living in the community.

(3) In November, 1928, it was estimated that the oil field gave employment to nine hundred persons, several hundred of them skilled workers who had been brought to Muskegon.[2] These temporary residents stimulated the commercial activities of the community. When hotel accommodations became inadequate, the principal hotel enlarged its facilities somewhat beyond the normal needs of the city.

(4) Much unskilled labor was recruited for work in the oil fields during a period in which the factories were experiencing an all-time record for production. For the first time since the World War, unemployment was practically nonexistent in the community.

(5) From September, 1928 until December, 1930, the utility company provided the community with natural gas from the oil field. When the supply became inadequate, the company reverted to the use of manufactured gas. The Continental and Lakey companies, which laid private pipe lines from the gas field to their foundries, are still supplied with natural gas.

(6) Because the oil field lies in an area covered with lacustrine sands, and because only secondary roads led to it, the transportation of supplies, workers, and oil presented a problem. As a result, the area now has roads, most of which have been

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[1]These are the refineries of the Old Dutch Refining Company and the Naph-Sol Refining Company. The refinery of the former company has a capacity of 4,000 barrels per day, that of the latter company about 1,500 barrels per day. Naphthas are the chief products of both.

[2]About seventy rigs were operating in the field. Each rig required eight or more skilled workers, most of whom came to Muskegon from other oil fields.

improved more or less.

(7) The oil boom, lasting into 1930, delayed the full effects of the depression of 1929 for nearly a year.

(8) Fumes from the field were more or less obnoxious.

(9) The salt content of the water in the municipal wells of North Muskegon increased alarmingly during the time of greatest drilling and pumping.

(10) The oil venture built small fortunes for several Muskegon residents and brought losses to many others.

Trends in Transportation

Throughout most of the present stage, railroads have led other forms of transportation, having outranked boats in the volume of raw materials shipped to Muskegon as well as in the volume of manufactured products shipped from the city. Since 1932, however, there has been a rejuvenation of transportation by lake at the expense of that by rail. Within the last decade, moreover, trucks have increased so greatly in efficiency and capacity that, as carriers of freight, they now offer crippling competition to the railroads serving Muskegon. As conveyors of passengers, the railroads have been replaced to a considerable extent by automobiles and by buses. The competition of railroads with trucks, buses, and automobiles is not unique, of course, to Muskegon. Competition between railroads and boats, however, is to be found in Michigan cities only in the lake ports, and the situation in Muskegon is more or less typical of that in other ports of the state.

The building of a belt railway was an adjustment to the transportational needs of Muskegon. Switching facilities were adequate at first, but with the rapid expansion of industry, existing services were unable to meet the demands made upon them. The railroads had been built to serve the industrial district of Muskegon city, and as a result, their services to the Lakeside and Muskegon Heights industrial districts were hampered and inefficient. The belt line was proposed as a means of breaking a monopoly on terminal facilities held by the Pere Marquette Railroad. This road strongly opposed plans to build such a line, for it had shut out effective competition and was forcing factories on other lines and those desiring connections with other lines to pay high switching charges. Chartered in 1917 and completed

in 1923,[1] the belt line provided improved terminal facilities for the industries and shippers of Greater Muskegon.

Inasmuch as the chief industries of the community are metal foundries and fabrication plants, it would seem logical that some of their raw materials should come by lake. Such is not the case. Rail facilities are used both to bring pig iron[2] and scrap to the foundries and to send castings to their destinations. The industries which use bar and sheet steel also rely upon rail transportation. At the present time, several metal-working establishments could make advantageous use of water transportation both for the receipt of materials and for the shipment of products, but they occupy sites on railroads at considerable distances from the shore of Muskegon Lake. The fact that some of the plants located on railroad lines when small helps to explain their continued use of rail facilities.

Railroads and industrial expansion.--As rapidly as available factory sites in the community were utilized, rail extensions were made to unused land on the outskirts of the urban area. Within a short time, new residential and commercial areas developed around industrial plants built along these extensions. The railroads were favored first, in that land near them was in many respects superior for industrial sites to land on or near the lake front, and second, in that practically every one of the industries was small at the outset and hence was better served by railroad than by any other form of transportation then available.

Changes in lake commerce.--Early in the present stage, the transportation of passengers and package-freight by lake was relatively more important than that of cargo-freight. Now the reverse is true: cargoes of petroleum products, pulpwood, pig iron, bulk cement, and coal are received, and cargoes of foundry sand are shipped.[3] Passenger movement takes place, for the most

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[1]Wheeler, op. cit., p. 38.

[2]In 1937 and 1938, however, some pig iron for the Campbell, Wyant, and Cannon Foundry arrived by boat.

[3]About 1922, the Chamber of Commerce became interested in the breaking of bulk from freighters to railroads. After obtaining improvements for the harbor, the Chamber worked for the construction of coal docks, cold storage facilities, petroleum tank farms, a cement wharf, and the Mart. All have been accomplished and all have aided in the industrial growth of the city.

part, by automobile and bus and package-freight movement by truck and rail.

At the present time, from forty to eighty freight cars are handled daily at the car-ferry slip (Fig. 50; pocket). As in the preceding stage, only a small fraction of the freight originates in Muskegon or is destined for it; the major portion of it is through traffic.

Before the day of the ubiquitous automobile, many people traveled between Muskegon and Chicago by boat. Although the number declined steadily for twenty years, the Goodrich Line maintained its daily service until 1932. Since 1933, ferries plying between Muskegon and Milwaukee have carried a limited number of passengers and automobiles. The amount of traffic during the summer has warranted the addition then of a boat designed specifically for passengers and automobiles. An analysis of the passenger movement indicates that much of it is of the holiday type or through-traffic type and hence is of less value in the development of the community than was the traffic in the early days of the stage, when most of the passengers were residents of Muskegon or were destined to the community for business or recreation.

Development of the highway pattern.--The development of the West Michigan Pike, a north-south highway passing through Muskegon, was the pioneer movement of its kind in the state. Until 1912, little effort had been made to connect the main roads of adjoining counties and thus to provide continuous highways for intercity traffic and for tourists.[1] Slowly a trunk highway system evolved (Fig. 54), the surfacing material being at first gravel and later macadam and concrete.

In 1922, before the hard-surfacing of the West Michigan Pike was completed, a company was organized in Muskegon to provide bus transportation between that city and Chicago.[2] Its service soon made crippling inroads into passenger traffic by rail and by lake. Today, this relatively new mode of transportation is playing an important part in the pattern of passenger movements. The interurban electric service between Grand Haven, Grand Rapids, and Muskegon was abandoned in April, 1927, following

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[1]Wheeler, op. cit., p. 16.

[2]This company was the forerunner of the vast Greyhound Lines.

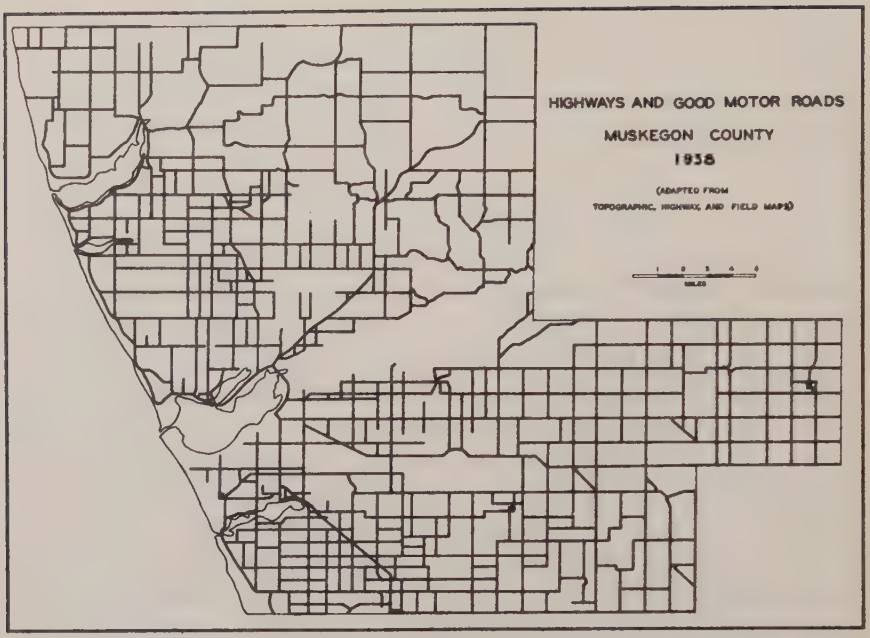

Fig. 54.--Muskegon County roads, 1938. There is only one bridge across the part of the Muskegon River that lies within the county, and roads on the flood plain swamps are few in number.

a one-sided struggle with the automobile and the bus for short-distance travel.

Within the past decade, service by truck has increased to such an extent that some factories in Muskegon are served almost entirely by that method, and all factories ship some of their products thereby.[1] The existence and success of certain small factories are attributed by their operators largely to the use of trucks, since with economy raw materials can be brought to the plants in small quantities and small lots of manufactured goods

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[1]It is impossible to obtain statistics on the quantity of freight moved by truck. Estimates supplied by the Chamber of Commerce and by officials of factories and trucking companies vary widely. Their figures indicate that trucks move anywhere from 30 to 50 per cent of the total volume of freight originating in or destined for Muskegon.

can be sent to market. Fruit and celery, which formerly were shipped by boat, now are moved almost exclusively by truck.[1]

Movement of certain commodities.--The fact that coal came to Muskegon by rail before 1927 can be accounted for chiefly by two factors. In the first place, the transition from wood to coal as a fuel for heating residences has been a slow one and is not yet complete. Early in the stage, there was not enough demand for coal to warrant its being brought to the city in boatload quantities. Later, when the demand grew, no dock facilities were available; with the passing of lumbering, the wooden docks had rotted and become useless. In the second place, most of the industries which came to Muskegon before 1927 were small, as already noted; accordingly, they chose sites on railroads in preference to those on Muskegon Lake. The small quantities of coal which they needed for power came by rail.

In time, the demand for coal was sufficient to justify transportation of some of it by lake boat. Even today, however, only two or three of the larger factories receive coal by water, since that procedure necessitates rehandling by truck from dock to factory. There are other disadvantages inherent in the purchase of coal in cargo volume. It deteriorates more or less rapidly when piled on an uncovered dock for any length of time, yet the closing of lake navigation about December fifteenth makes it necessary that a winter's supply be laid in before that date. Moreover, considerable capital is tied up in a boatload of coal. Furthermore, in Muskegon, as in many other lake ports, the consumer of coal does not receive a proportionate share of the savings made by water transportation.

On the lake front in the Lakeside district, the Standard Oil Company of Indiana maintains a tank farm, from which it distributes gasoline, kerosene, and other products throughout much of the western half of the Lower Peninsula. Inbound movement is by tanker from Whiting, Indiana; outbound, except to Muskegon and vicinity, is by rail.[2] The Standard Oil Company has a working

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[1]In September, 1938, a count made on U. S. Highway 31 between Michigan City, Indiana and Muskegon revealed that two out of three vehicles (automobiles included) moving southward were carrying fruit or vegetables.

[2]Greater Muskegon Chamber of Commerce, A Civic and Industrial Survey of the Muskegon Area and Western Michigan (Muskegon, Michigan, 1931), p. 16.

agreement with three other large oil companies by which it supplies oil products to their outlets in the Muskegon distributing area. In turn, each of these three companies supplies the Standard Oil Company in other distributing areas of the Middle West. The Socony Vacuum Oil Company operates a somewhat smaller tank farm near the Glenside district. Petroleum products are brought in by tanker and are sent out to western Michigan by truck and rail. Approximately 95,000,000 gallons (320,000 tons) of petroleum products are received and distributed annually by the tank farms in Muskegon.

In some years, the Central Paper Company receives all of its pulpwood billets by rail or truck from Michigan areas. In others, part of the supply is received by boat from Canadian ports. The outlay of capital for a boatload of wood is offset by uniformity in quality.

Sand is loaded in large quantities at Pigeon Hill, the dune on the western outskirts of the community. Throughout the season of navigation, several boats loaded with this commodity clear the harbor each week, most of them destined to foundries in or near lake ports.[1] Delivery to local foundries is made by truck. The utility of dune sand for foundry purposes lies in the uniformity of grade size imparted to it by the action of the wind.[2]

The Huron Cement Company brings in bulk cement by freighter from one or another of its plants. After being unloaded at the company's modern dock, completed in 1938, the cement is stored, packaged, and loaded for shipment by truck and rail to the western half of the Lower Peninsula.

Interregional Relationship of Agriculture

In the present stage, as in the preceding ones, agricultural activities near Muskegon have been limited by the relatively sterile soils. The pine barrens, which comprise seventy per cent

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[1]Among the boats noted during field work was one belonging to the Ford Motor Company--an indication of the utility and quality of this deposit.

[2]Each automobile engine block requires from 200 to 500 pounds of sand. In periods of peak production, the Campbell, Wyant, and Cannon Foundry uses nearly 1,000 tons daily, obtaining it from the large company-owned dune near the plant. Pere Marquette Magazine, June, 1932.

of the area of the county, have never lent themselves to extensive agricultural development.[1] They consist of lacustrine and glacial sands and, accordingly, are poor retainers of soil moisture. The disabilities of these sandy soils are caused by paucity of soil moisture, resulting from the high porosity of the soil material; absence of humus, due to repeated fires; acidity, produced by the decomposition of pine needles;[2] and iron hardpan layers.[3] Although locally there is some dairying, scrub and second-growth timber now cover most of the barrens.

In the history of agriculture in Muskegon County, 1910 was the year in which there was the largest number of farms, the maximum acreage in farms, and the greatest amount of improved land (Table 5). The increase in the number of farms between 1930 and 1935 was accompanied by a decrease of 8,500 acres in the area of land in crops. This change reflects the tendency of families to establish homes on rather small plots without intending to raise field crops. The decreasing acreage in crops probably results from an abandonment of land of poor to moderate fertility. Tenancy in the county never has been high, partly because of the relatively infertile soils.

The brightest picture, agriculturally, lies on the outskirts of the community, where approximately 250 acres of muck soils[4] are utilized for the cultivation of celery (Fig. 46; pocket). On this small acreage are grown such amounts of this crop as to make Muskegon one of the principal celery-producing centers of Michigan. The muck soils form a root bed and a water reservoir for the crop; commercial fertilizers furnish the requisite plant food. A washing and packing plant is operated from

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[1]The principal soil is the Plainfield loamy sand, which requires fertilization if grains and fruits are to be grown on it. Of no value for crops is the Saugatuck sand, which also is to be found on the barrens. Sand grass and scrub oak are the chief vegetative covers of the area. Soil classes are: loamy sand, 53.2%; sand, 18.4%; sandy loam, 9.2%; loam, 10.9%; and muck, 7.5%.

[2]Louis P. Haight, "The Michigan Pine Barrens," The Sand Farmer I (September 14, 1915), 1 ff.

[3]These occur locally only.

[4]These are the Carlisle and Houghton muck soils. They lie along the stream flats and comprise 7.5% of the area of the county.

July first until November. As many as 425,000 crates of celery have been shipped annually from Muskegon, chiefly to Chicago.[1]

Most of the celery growers are Dutch.[2] Their knowledge of wet-land agriculture has made them very successful in this type of truck farming, as attested by their substantial homes on the higher lands bordering their diminutive farms.

The growing of apples constitutes another type of specialized agriculture near Muskegon. More than ten per cent of the commercial crop of Michigan comes from orchards in the vicinity of the city and is packed in and shipped from the Mart. As many as 620 carloads have been handled annually. In 1923, 241,000 crates were shipped, either by rail or by lake; in 1938, approximately 300,000 crates[3] were shipped, most of them by truck.

Dairying constitutes a third type of specialized agriculture. There has been a close correlation between the demand for milk in the community and the number of farms nearby which have kept commercial herds. The production of cream, butter, and cheese is unimportant.

The remainder of the agricultural picture has been unimpressive, as already indicated. With the passing of logging and lumbering in the Muskegon area, many Scandinavians settled on tracts of cutover land. Their standard of agriculture has remained ever since at a near-subsistence level. Although there are several hundred farms of this type in the county, they add but little to the service function of the community. On the

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[1]There are three important celery-producing areas in western Michigan. They are located in and around Kalamazoo, Muskegon, and Grand Haven. The last two ship to Chicago, the first to the eastern market. L. A. Chase, Rural Michigan (New York: Macmillan Co., 1922), p. 199.

[2]The following list of names of celery growers was taken from a Muskegon City Directory:

Peter A. Battema	Evert Dekker	Jacob Timmer
John Bishop	John DeLong	Drewes Tuuk
John Bos	Thomas DeLong	Jurrien Vander Molen
Gerrit Bosch	Jacobus DeMaar	Evert Wagonmaker
Thomas Bouwcamp	Gerrit Doorn	Peter Wierenga
Oets Bouwsma	Reus P. Luytjes	John Witt
John D. Cooper	Abel Riekels	Abram Workman
Julius DeDoer	Cornelius Robb	
Cornelius Dekker	Paul J. Tanis	

[3]This figure is the estimate of certain growers. No definite figures on truck tonnages are available.

other hand, the rise of manufacturing in Muskegon has attracted many young people from such farms. In support of this fact, census records show a decreasing rural population in the area.

CHAPTER V

THE OUTLOOK

The immediate future of Muskegon is obscure because of the uncertainty of many factors. The possibilities range from the optimistic prophecies of wishful thinkers among the civic leaders to the pessimistic forecasts of factory operators in the depths of an economic depression. Future developments probably lie between the two extremes.

The outlook for industry in Muskegon appears to be fair. It seems reasonable to expect automotive and metal-working establishments to continue operations. The present diversification of products in these and other fields is a healthy factor. Because of its strong ties with the automobile industry, the community will reflect in greater or less degree the vicissitudes of that industry, sharing with it both in prosperity and in adversity.

Strong rivalry among industrial centers for factories undoubtedly will continue, and Muskegon may find it especially difficult to compete with large cities. The Annual Report of the Greater Muskegon Industrial Foundation for a recent year contained the following statement:

> In spite of the talk of decentralization, the larger cities are still attractive forces for manufacturing. In view of the fact that we [factories at Muskegon] operate in the Chicago territory, our heaviest competition comes from an area within fifty miles of the Loop. During the past year, several Chicago plants desiring to leave the city located in Chicago suburban territory. Their chief reasons in choosing that location rather than Muskegon are ability to retain residence in Chicago and the readier access to the Chicago market.

During the past forty-five years, more than $600,000 has been expended in bonuses to attract manufacturing plants to Muskegon. In the future, it probably will be necessary to raise new and perhaps larger funds for the same purpose.

In industry today there is a trend toward dividing the production of a single large plant among several small ones in various parts of the country. Such a scheme of decentralization

may operate in Muskegon in various ways and with different results.

(1) A large corporation may choose Muskegon as a site for one of its operating units and build a factory there. With the opening of the new plant, the community would stand to gain industrially and commercially. It should be borne in mind, however, that competition with Chicago and Detroit is likely to be keen, inasmuch as a factory in either of those two cities or its suburbs would benefit from a larger local market and from better distributing facilities than Muskegon can offer.

(2) A corporation may acquire a plant already operating in Muskegon and make it one of its decentralized units. In this event, the community might gain or lose, or neither gain nor lose. A recent example of gain from such a procedure was afforded by the purchase of the Norge Refrigerator Company by the Borg-Warner Corporation. The community benefited significantly because the new owner expanded operations at the Muskegon Heights plant.

(3) A corporation may acquire a plant already operating in Muskegon and abandon it after a trial period. In this case, the useful machinery and a few skilled employees might be taken to the new scene of operations and the less skilled employees be thrown out of work. A recent example was the abandonment of the Bennett Pump Company plant soon after it was taken over in a merger.

To help ensure a reasonable measure of success in future industrial developments, enterprises should be sought which could utilize partially fabricated materials now produced in the community or which could produce parts for higher fabrication by other plants there. An automobile assembly plant to utilize some of the many parts produced in the community might be located to advantage on the lake front, whence shipments could be made by boat to Chicago and Milwaukee.

It is possible that in the future various industries of types new to Muskegon may be located on the shore of Muskegon Lake, where lake transportation is available, where to large extent rail connections now exist, and where sites are cheap. Only relatively large industrial concerns would be able to develop land and private docks there effectively, for the swampy character of the shore line and the wood piling remaining from lumbering days make improvements rather costly. Already facilities have

been installed for breaking bulk for coal, oil, cement, pulpwood, and pig iron. Other types of raw materials conceivably might make advantageous use of the port facilities of the community.

The oil refineries will last only until existing equipment is obsolescent or until the requisite supply of oil fails. The latter seems less imminent than the former, for new oil fields in western Michigan have been discovered in almost every year since the erection of the refineries at Muskegon.

There is little room for expansion of residential areas within the corporate limits. Future growth will be beyond the limits of the community in platted areas extending a few blocks on either side of important highways which provide ready access to the factories. Even today the urban area is tending to assume a tentacled shape. Accessibility both to the factories in Muskegon Heights and to those along the shore of Muskegon Lake is provided in East Muskegon, now developing rapidly. This suburb should continue to grow for some time. Development of residential districts for professional and "white collar" workers probably will continue in Glenside, in North Muskegon, and in restricted sections fronting either Muskegon Lake or Lake Michigan.

There can be little question concerning the immediate future of the agricultural hinterland. It is unlikely that dairying will develop beyond the needs of the urban community. Areas in celery may be enlarged somewhat, but development will have to take place on lands less suited to the crop than those on which it is now grown. There seems little opportunity for expansion of the acreage in apple orchards until capital and especially until additional market outlets can be secured. The number of farms devoted to general agriculture will decrease, some of the shrinkage being a result of the recent establishment of the Manistee National Forest, which now includes the northeastern third of the county and stretches northward and northeastward to the Traverse City area. As fast as farm land within the limits of the national forest is abandoned legally, it becomes part of the nonagricultural land of the forest and ceases to be an economic liability to the county.

The disability inherent in the semicircular shape of the trade area of Muskegon will become more apparent rather than less apparent as transportation by highway improves. The commercial function in the community may decrease, especially with respect

to such items as clothing and furniture, as the comparatively large stocks of stores in Grand Rapids draw customers from Muskegon. Still further decrease may occur as the Manistee National Forest absorbs land not suited to agriculture.

Muskegon lies between two important resort areas of the state, one of them centering around South Haven, the other around Traverse City. In the past, there has been no significant development of "resorting" in or near Muskegon, and there is little prospect of such development, for, generally speaking, the area possesses little variety in scenery and relief. A few summer homes and summer camps have been built on the shores of the seven small lakes that dot the county.

The transportational function has undergone so many changes during the last decade that it is difficult to analyze its immediate future. Competition of trucks, buses, and automobiles with railroads undoubtedly will persist. It also is likely that sand, oil, cement, and coal will continue to be transported by water.

With the advent of large fleets of trucks, there seems to be a need for truck-ferry service between Muskegon and Milwaukee to match the ferry service rendered to railroad cars and private automobiles. A Detroit corporation advertised in 1935 that it would construct a boat adapted to carrying large trucks.[1] Trucking companies favored the innovation, but the railroads were antagonistic. Accordingly, the Interstate Commerce Commission ruled that the corporation must desist from advertising its scheme until the Commission had considered the plan. If truck-ferries are placed in service on Lake Michigan, Muskegon probably will become a terminus by reason of the trunk highways which connect it with Detroit and the East.[2]

It seems probable that young people will continue to leave the poorer farms of the area to seek employment in the factories of Muskegon and of other cities. Likewise, the limited opportunities in commercial and professional fields in Muskegon will cause many young people reared there to leave their homes for

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[1]Truck-ferries have operated on Chesapeake Bay since 1934--proof that such boats have merit.

[2]U. S. Highways 31 and 16 cross Lake Michigan between Muskegon and Milwaukee.

larger cities where placement possibilities are better. Thus the community will gain a part of the better farm population but will lose some of the better individuals among its own youth.

Whether the population of Muskegon will increase or decrease depends, for the most part, upon the fate of industry there. Its advantages for industry are offset somewhat by its peripheral position both in the manufacturing belt of the United States and in the area in which automobiles are manufactured. Inasmuch as a fourth or more of the industrial workers of the community depend upon employment in establishments which produce automotive parts, it suffers from seasonal unemployment. The growing diversity of its manufactures, on the other hand, makes for a brighter outlook than otherwise would be possible. Without manufacturing, there still would be need for a service center and political center in that part of western Michigan, small though it would be in view of the unproductive hinterland. The demonstrated ability of Muskegon to readjust its economic life to meet shifting conditions, to augment advantages, and to minify disadvantages is likely to be a highly important, though imponderable, factor in the future of the community. It implies moderate growth, rather than stagnation or decay.

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